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No. 45

Conservation: China's 'Fifth Energy Resource'

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INEFFICIENT CONSUMPTION SPURS NATIONWIDE CONSERVATION EFFORT

Beijing GONGREN RIBAO in Chinese 2 Nov 79 pp 1, 2

[Article: "Conservation of Energy Resources Is a Major, Pressing Task in the Development of the National Economy; Excerpts from Comrade Kang Shien's Speech on the Occasion of the First Nationwide 'Energy Conservation Month' Radio Broadcast and Television Rally" (for full text of speech, see FBIS DAILY REPORT, PEOPLE'S REPUBLIC OF CHINA, Vol 1, No 213, 1 Nov 79 p L-12)]

[Text] Why are we currently giving special emphasis to energy conservation? Because of the long period of disturbance and destruction caused by Lin Biao and the "gang of four," energy administration is in chaos and the effective utilization rate of heat energy is very low with shocking losses and waste in coal, petroleum, and electric power. According to rough calculations, we annually consume about 40 to 50 million tons more coal than we should, consume 3 or 4 million tons more petroleum than we should, and consume 20 or 30 billion more kilowatt hours of electricity than we should. Were we to make a comparison with the advanced standards of foreign countries, the waste would be even greater. Our country's heat energy effective utilization rate for fuel is only about 28 percent while industrially developed countries have already achieved about 50 percent, or almost double. Unless earnest efforts are made to change this state of affairs, building of the Four Modernizations will inevitably be affected. Consequently, the problem of conserving energy has become an extremely prominent and pressing task in the development of our national economy.

What problems presently exist in the use and management of our energy? First of all, conservation of energy and efforts at reducing consumption have not yet attracted sufficient attention. Throughout the country in almost half of enterprises consumption of coal, petroleum, and electric power per unit of product is higher today than the best levels attained by these same enterprises in the past, and per unit consumption for the production of some goods has risen during the first half of this year over what it was during the same period last year. Within the same industry,

per unit consumption norms for identical goods produced by different enterprises show wide disparities. Secondly, energy management work is weak. At the present time there are still quite a few units in which no quotas exist on the consumption of energy, where there is no measuring or metering, no accounting, and where a system of responsibility is not earnestly adhered to with leakage reaching serious proportions. Chimneys belch black smoke, heating conduits have no provisions for keeping in the heat and equipment leaks oil, steam, or water with no one looking after them, wasting much precious energy for nothing. Moreover, we have leadership comrades in some units who turn a blind eye to these states of affairs and are apathetic. Third, burning of oil is excessive and resources are not being rationally used. Fourth, aggregate utilization of resources is poor. An investigation of 358 enterprises in 9 industries including metallurgy, chemicals, petroleum, and building materials found that no good use was made of waste heat in combustible gases, waste heat in discarded steam and water, or waste heat from chemical reactions. These waste heat resources were equal to 13.5 million tons of coal. Fifth, use of electricity by some enterprises and by agriculture in some areas lacks any overall plan or rational layout with chaotic drawing of electricity and hook-ups and with circuits not meeting standards, thus creating serious waste and resulting in numerous injuries or deaths from accidents as well. These incidents show that the waste of energy resources is serious and that a vast potential exists for the conservation of energy.

Can we effectively conserve energy resources? The experiences of numerous regions and units attest that so long as leadership shows serious concern and the masses are aroused and relied upon, the methods are numerous and conservation of energy is very much possible. During the year, in Shanghai, in Changzhou, in Heilongjiang Province, in the Northeast Electricity Administration, at Anshan, in Zhejiang Province, in the carbon black plant at Shaoyang in Hunan Province and throughout the railroads nationwide, employees have had numerous experiences in energy conservation and in conversion from petroleum to coal and have registered good results. We must earnestly learn from and disseminate these advanced experiences from enterprises and regions to bring even greater accomplishments to the task of energy conservation.

Conserving energy and putting an end to waste is an important ingredient in the thorough readjustment, restructuring, consolidation, and improvement program, and it is the most reliable way of ameliorating the present shortage of energy resources. Recently the State Council approved a system of "Energy Conservation Month" campaigns beginning from this year throughout the country. Each year there will be concentrated within a space of time wide publicity on the importance of conserving energy, a summarization and exchange of progressive experiences in the conservation of energy, commendations to progressive units and individuals for conservation of energy, and the formulation and implementation annually of an energy conservation program to routinize and systematize the conservation of energy resources.

Conservation of energy resources is intimately related to every enterprise, every government organization, every school, every military unit, every production team, and to every individual.

The launching of the "Energy Conservation Month" campaign must widely incite the masses and through massive propaganda, massive inspections, massive public appraisal, and massive implementation, be made known to every household and a new socialist habit and a new ethic be established in which "conservation of energy is honorable but waste of energy is shameful." Every trade and industry and every battleline should mobilize at once to conserve 1 jin of coal, 1 drop of oil, 1 kilowatt hour of electric power, and 1 liter of water with everyone making a contribution to the conservation of energy by doing his part for the realization of the Four Modernizations.

1. Steadily, intensively and sustainedly launch a campaign to increase production and conserve energy, increasing production even while saving energy and accelerating speed even while saving energy. We are about to enter the winter season of warming ourselves and keeping warm when demands for fuels will greatly increase. The crux of whether or not steady increases in production by industry and transportation can be maintained and whether a balance can be maintained between supply and demand of energy lies in how good a job is done in the conservation of energy resources. Each enterprise and each unit ought to launch a wideranging competition in the conservation of energy for similar industries and similar kinds of industries, study and popularize experiences in the conservation of energy of progressive units, resolutely overcome losses and waste of energy resources caused by bad management, fulfill this year's tasks for the conservation of coal, oil, and electric power, and formulate next year's program for the conservation of energy. For the country as a whole, next year ought to bring a saving of 10 percent in oil, 5 percent in coal conservation, and 3 percent in the conservation of electric power.

2. Continue to strive for product quality. Improvement in product quality is an important way to reduce consumption of energy resources. Poor quality makes for the greatest waste in fuel, energy and raw materials. When quality is improved with the amount of substandard goods and useless goods diminished, the same amount of fuel, energy, and raw materials may be used to produce more goods whose life will be long, performance good, efficiency high, with one taking the place of several for a great growth in the wealth of society.

3. The coal, petroleum, and electric power sectors that produce energy resources must strive to increase production, practice conservation and fulfill or surpass quotas in this year's state plan. The coal sector should do more tunneling, adjusting the amount of excavation relative to tunneling; it should make vigorous efforts to reduce the ash content of its commodity coal, the rock content and the water content of its washed superior quality coal, and the amount of coal it consumes itself. The

petroleum sector should make vigorous efforts in prospecting to discover new resources, cut back its own use of petroleum and gas, reduce waste, enhance recovery of oil left in the ground and used oil, and make full use of the gas in oil fields and waste gas in oil refineries.

The electric power sector ought to give great effort to complete the fitting out of existing power stations, to reduction of power consumption by generating plants themselves and line losses, and achieve safe production with constant generation and constant supply. It should effectively revamp consumption of electricity by industry and agriculture, diminish waste and loss, overhaul lines to meet standards, and not transmit electricity when it will endanger safety.

4. Each sector, each region, each enterprise, and each unit should launch a fullblown investigation into the uses of energy resources and do a good job in balanced heating. They should earnestly find out the situation in use of energy resources, look for gaps, investigate the causes for waste, and formulate measures for improvements. They should earnestly intensify basic work, straighten out firsthand records, give substance to metering and measuring methods, do a good job of insulating conduits and managing water, and plug up runoff, emissions, drips and leaks. All enterprises and units having waste heat resources should actively create conditions for the use of waste heat or use it to generate electricity. In cities where suitable conditions exist, supply of heat from a central source should be gradually implemented.

5. Establish and perfect a system for strict management of energy resources. Consumption quotas should be conscientiously formulated and strictly enforced. For every product, every work process, and every factory team and group there should be a consumption quota for fuel and motive power with materials being issued and used on the basis of quotas. Actual consumption presently still exceeds the best levels of the past and measures must be taken within a limited period of time to reduce consumption. Fixed amounts should be supplied for coupons or certificates to make coal, oil, and electric power be managed and used in the same way as grain rations are managed. In all government organizations, military units, schools, enterprises and industrial units, and in communes and brigades in rural villages, the system of flat rate billing for electricity, gas, and water consumption must be replaced by metered billing.

6. Vigorously promote positive experiences and advanced technology for the conservation of energy resources. Effective experiences in some firms for conserving coal, petroleum, electricity, gas, and water such as burning low quality fuels, innovative improvements in furnaces, use of plastic materials to insulate against cold, and far infrared heating technology should be promoted far and wide by each region and each sector. Technical levels for improved use of energy resources must be raised with active replacement made to equipment where consumption is high and efficiency low. The program that the government layed out this year for the replacement of

oil burning equipment with coal burning equipment to save energy resources should be expeditiously put into practice. Generation of electricity using waste heat and projects for converting from the burning of oil to the burning of coal will be given priority billing in next year's plan.

7. Enhance technical training. Every worker involved in production and the use of energy resources should be given technical training in conservation of energy resources to make him thoroughly cognizant of techniques for the conservation of energy in the position he occupies.

8. Buttress supervision of the uses of energy resources with a delineation of rewards and punishments. Give individual rewards for conserving coal, petroleum, and electric power, and, depending on the value of the conservation and in accordance with what the state has stipulated, make cash awards to those employees who have made a contribution in the conservation of energy. Earnestly enforce the principle of supplying the select, guaranteeing supplies of fuel and electricity to those enterprises where consumption is low, quality good, and where a market exists for their goods. For those enterprises where consumption is high, quality poor, and where products can find no market, either improvements should be effected within a certain period of time or production should be stopped and adjustments made. Where technology is very out of date as in the case of boilers, diesel engines, or motor cars with high energy consumption, production and use should be gradually limited or stopped.

9. Actively launch scientific and technical study work on the uses of energy resources so as to create the conditions for future use of advanced equipment and production technologies where energy consumption is low and efficiency high. In rural villages vigorous efforts should be made to expand the use of methane gas. In places where conditions permit there should be planned expansion in use of the new technologies of solar energy, geothermal energy, and wind energy. The machinery, light industry, commercial, and goods sectors should actively organize production and supply of "one scale," "three meters" (kilowatt hour meters, coal gas meters, water meters), "three gages" (flow gages, temperature gages, and pressure gages), as well as various metering and measuring instruments so as to create conditions for the conservation of energy.

10. Strengthen the organization of leadership, gradually establishing a nationwide energy resources management system. The State Planning Commission should strengthen management of energy resources giving substance to such organizations. Pertinent ministries of the State Council as well as the Economic Commissions of each province, municipality, and autonomous region should strengthen their energy resources management organizations, and enterprises that consume quite a bit of energy should also set up a special organization. All enterprises should have a person responsible for energy use and energy conservation work.

The launching of the "Energy Conservation Month" campaign is merely the first major effort to do a good job in conservation of energy resources. Through this campaign we should increase our awareness and carry forward energy conservation work steadily, intensively, and through the months and year to really make it effective.

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ENERGY CONSERVATION SAID CRITICAL TO REALIZATION OF 'FOUR MODERNIZATIONS'

Tianjin TIANJIN RIBAO in Chinese 2 Nov 79 p 1

[Article: "Achieving the Four Modernizations Through Mass Effort To Conserve Energy Resources"]

[Text] National "Energy Conservation Month" Radio and Television Conference Calls for Immediate Mobilization of Every Profession and Business

The "National 'Energy Conservation Month' Radio and Television Conference" jointly sponsored by the State Economic Commission, the Central People's Broadcasting Station and the Central Television Station was held in Beijing on the afternoon of 31 October. The meeting called for the mobilization of all regions, all professions and all businesses to conserve every gram of coal, every drop of oil, every kilowatt hour of electricity, every liter of water and every cubic meter of gas so that everyone can contribute to energy conservation and do his part in the realization of the Four Modernizations.

Recently, the State Council decided to establish an "energy conservation month" movement starting this year so that the work of energy conservation would become regular and systematic. This conference was held for the purpose of launching a good beginning for this year's "energy conservation month" activities.

Member of the Chinese Communist Party Central Committee Politburo and Vice Premier of the State Council Fang Yi, and vice premiers of the State Council Kang Shien and Bo Yibo attended the conference. Deputy Director of the State Economic Commission Yuan Naohua [5913 1405 5478] presided over the meeting.

Vice Premier Kang Shien addressed the conference, pointing out that energy conservation has become a major, urgent task in the development of our nation's national economy. At present, the major problems that exist in our nation's utilization and management of energy are: to lower consumption; the work of energy conservation has not yet attracted sufficient

emphasis by the people; work in energy management is weak; too much oil is being burned and petroleum is not being rationally utilized; comprehensive utilization of energy resources is poor; overall planning of power for industrial use and for regional agricultural use is lacking and power distribution is not logical. All these situations indicate the existence of a serious waste of energy, loss of energy and overconsumption of energy, while the potential for conservation is great. Conserving energy and ending waste is an important part of the policy to readjust, restructure, consolidate and improve. It is the most reliable way to ease today's tight supply of energy.

Vice Premier Kang asked that in this year's "energy conservation month" activities, each region, each department, and each enterprise conscientiously do the following work well:

1. Continue to deepen and persist in carrying out the movement to increase production and conservation. Greater and faster production must go hand-in-hand with conservation. Each enterprise and unit must hold competitions in conservation in the same line of work on a wide scale, learn and promote the experiences in energy conservation of the advanced units, insist on overcoming the loss and waste of energy due to poor management, complete this year's task of conserving coal, oil, and electricity and draw up energy conservation plans for next year. Throughout the nation, the task of conserving 10 percent of oil, 5 percent of coal and 3 percent of electricity should be accomplished next year.
2. Continue to grasp product quality control. Poor quality is a waste of fuel, power and raw materials. Raising quality will make it possible to produce more products with the same amount of fuel, power and raw materials.
3. Production departments of such energy resources as coal, petroleum and electric power must exert their efforts to increase production, carry out conservation and fulfill on an overall basis and overfulfill the state plan.
4. Each department, region, enterprise and unit must launch an overall survey of the use of energy resources and do the work of utilizing heat sources well. The present situation of utilizing energy resources must be thoroughly understood, differences must be found, wastefulness and the cause of wastefulness must be investigated, and measures of improvement must be drawn up. All enterprises and units with surplus heat energy resources must actively create situations to utilize the surplus heat energy or to generate power with surplus heat sources. In cities where conditions are favorable, a centralized heat supply must be gradually implemented.
5. Establish and strengthen a rigorous system of energy management. Consumption quotas must be conscientiously established, examined and strictly implemented, and distribution and utilization of fuel resources

must be according to set quotas. At present, all cases of actual consumption which surpass the highest recorded levels must be reduced by appropriate measures within a certain time limit.

6. Advanced energy conservation technology must be popularized in an all-out manner. The experience of some professions in the effective conservation of coal, electricity, oil, gas and water must all be widely popularized by each locality and department.

7. Strengthen technical training. Each worker in production and each one who uses energy resources must be educated in energy conservation technology so that they will become familiar with and be able to grasp this technology as applied to their work posts.

8. Strengthen supervision of the use of energy resources and spell out rewards and punishments clearly. A portion of the value of the conserved energy should be taken out according to state regulation to reward those staff members and workers who contribute toward energy conservation. The principle of supplying energy resources for use by worthy enterprises should be conscientiously implemented.

9. Actively carry out scientific and technological research work in the utilization of energy resources to create conditions for the future use of advanced equipment and production technologies which are highly efficient and which consume less energy. In farm villages, the utilization of methane must be popularized with great effort. Where conditions are favorable, the use of such energy resources as solar energy, geothermal energy and wind must be popularized according to plan.

10. Strengthen organization and leadership and progressively establish a national energy management network.

Vice Premier Kang said that the launching of the "energy conservation month" movement is only the first big step in carrying out energy conservation well. With this movement, we must persistently and profoundly grasp the work of energy conservation for years and years to come and actually produce results.

At the radio and television conference, Comrade Gao Zhongzhi [7559 1350 2535], Deputy Director of the Office of Industry and Transportation of the Shanghai Municipal Revolutionary Committee, and other comrades reported separately on their experience in launching the energy conservation movement.

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'ENERGY CONSERVATION MONTH' TO BECOME ANNUAL EVENT

Beijing GONGREN RIBAO in Chinese 2 Nov 79 p 1

[Article: "Launching the Energy Conservation Campaign on a Grand Scale; State Economic Commission, Central Broadcasting Station and Central Television Station Jointly Present a Nationwide Radio and Television Conference on 'Energy Conservation Month'"]

[Excerpt] The most recent decision of the State Council to set up an annual "Energy Conservation Month" campaign to begin this year routinized and systematized the work of energy conservation. This conference was intended to launch this year's "Energy Conservation Month." Chinese Communist Party Central Politburo member and State Council Vice-Premier Fang Yi, State Council vice-premiers Kang Shien and Bo Yibo attended the rally. Deputy Director Yuan Baohua, of the State Economic Commission chaired the rally.

In the radio and television conference, the deputy chairman of the Shanghai Municipal Committee's industrial transportation office, Comrade Gao Zongzhi [7559 1350 2535]; the deputy manager of the Anshan Steel Company, Comrade Yin Yuan [3009 3220], the deputy chief of the Northeast Electric Industries Administration, Comrade An Yujing [1344 5148 7234]; the deputy secretary of the party committee of the Changling Petroleum Refinery in Hunan, Comrade Li Xing [2621 5281]; the deputy chairman of the Guangdong Provincial Economic Commission, Comrade Bo Hanqiu [2672 3352 4428]; the deputy chief of the Zhixian [1728 1807 6343]; the deputy plant manager of the Fushun Cement Plant in Liaoning Province, Comrade Song Qingfa [1345 1987 4099]; and the deputy chairman of the Nanjing Municipal CCP Revolutionary Committee, Comrade Yang Zhi [2799 1807] individually spoke briefly on experiences of their regions or units in launching the campaign to conserve energy resources. The comrades who spoke were unanimous in expressing the need for immediate mobilization for thoroughgoing and positive implementation of pertinent instructions on energy conservation from the Party Central Committee and the State Council as well as the spirit of this conference. They also called for the launching on a grand scale of the

"Energy Conservation Month" campaign, a mustering of the masses to check on conservation of energy, to look into waste, to expose harmful practices, to seek out shortcomings, to formulate measures, and unite to wage war with one heart and one mind to bring about a further reduction in energy consumption, to catch up with or exceed advanced domestic and foreign standards for the consumption of energy, to gain new victories in the campaign for increased production and conservation, and to make a new contribution to the acceleration of the Four Modernizations.

Attending the radio and television rally were members from each of the ministries, commissions, and bureaus under the State Council, the General Rear Services Department of the Chinese People's Liberation Army and the Beijing Command, and responsible officers of the Beijing Municipal Revolutionary Committee. In addition, there were more than 2000 delegates from advanced units on the industrial and transportation fronts, as well as workers, cadres, engineers, technical personnel, the families of employees, and officers and men of PLA units from every region and profession of the country, who listened and watched the rally.

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ENERGY CONSUMERS RESPOND TO CONSERVATION APPEAL

Tianjin Lists Successes in Saving Energy

Beijing GONGREN RIBAO in Chinese 2 Nov 79 p 1

[Article by Huang Zuoren [7806 0155 0088] and Dai Renjie [2071 0088 2638]: "Tianjin Takes Forceful Steps To Conserve Energy Resources; Large Amounts of Coal, Petroleum, and Electric Power Conserved Between January and September of This Year"]

[Text] Serious attention to the handling of energy conservation tasks on the part of the leadership at all levels in Tianjin Municipality, and implementation of various measures has brought a saving of more than 34,600 tons of petroleum for the period January through September as compared with planned consumption, a saving in electric power of more than 97.5 million kilowatt hours, and a saving of more than 185,000 tons of coal.

All levels of leadership in Tianjin took a series of effective steps to conserve energy. From the city to the bureaus, companies and enterprises, organizations for the handling of energy conservation work were set up and run by leadership comrades at every level. Clear identification of key areas, intensive concern about large consumers of energy, annual consumption of petroleum, consumption of coal in excess of 10,000 tons, and the 96 big consumers who used electricity in excess of 2,500 kilowatts, were directly handled by the Municipal Economic Commission and the responsible bureaus, with the other medium and small users being handled by the companies. The municipality and the bureaus took joint responsibility in getting to the heart of the matter in energy consumption, compiling statistical data user by user on energy use, formulating conservation plans and carrying out periodic inspections. The Municipal Economic Commission listened once every 10 days to a report on energy conservation, intensively following up on implementation. They vigorously expanded new technology and new techniques for the conservation of energy, as in the case of No 1 Cotton Textile Mill where the use of chemicals to get rid of ashes improved the heating efficiency of the boilers so that each ton of coal produced an additional 230 kilograms of steam. The No 1 Steel Rolling Mill

adopted new technology using double layers of prefabricated insulation for wrapping, thereby effecting a reduction in oil consumption by 37.5 percent in the blooming of each ton of steel. Additionally, they gave attention to converting the boilers from burning petroleum to burning coal. For large users of electricity they installed electric power regulators that supplied electric power only up to the planned amount. They popularized the experience of the No 2 Cotton Textile Mill in switching from flat fees for electricity to fees based on metering of consumption. They also put into effect a system of rewards and punishments for energy use with conservers being rewarded and wasters being punished. These measures achieved fine results in the conservation of energy.

Shanghai Claims Greater Output, Lower Energy Usage

Beijing GONGREN RIBAO in Chinese 2 Nov 79 p 1

[Article: "Increasing Production and Speed Through Conservation"]

[Text] Positive measures adopted by Shanghai municipal industrial and transportation sectors to conserve energy and increase production and to accelerate speed in the process of conservation have achieved outstanding results. Aggregate output value for industry citywide for the period January through September of this year has exceeded that of the same period last year by 7.7 percent, while electricity consumption increased only 3.2 percent over the same period last year, and a decline of 1.6 percent occurred in consumption of both coal and petroleum.

The most prominent conflict this year in industrial production in Shanghai has been large production tasks to fulfill on a severely restricted supply of fuels and electric power. In order to resolve this conflict and assure large increases in industrial production, the municipal industrial and transportation sector made conservation of energy and increases in production the key ways to develop production in the campaign to increase production and practice conservation. During the past 9 months they have pursued the following 5 tasks:

1. Broad motivation of the Masses To Launch a Campaign To Save Energy

Every trade and industry throughout the city has aroused the masses to keep itemized accounts of every speck and drop, to uncover unused potential from every nook and cranny, and to use every manner of means to conserve 1 kilowatt hour of electricity, 1 jin of coal, and 1 liang of oil. Numerous plants have further strengthened cost accounting for coal, electricity, and oil by instituting a main ledger for the plant, a general ledger for each workshop, and an itemized accounting for each factory team and group, with individuals maintaining a small listing in an effort to further reduce consumption and produce more goods. The Shanghai No 17

Cotton Textile Mill initiated millwide discussion among employees to "contrast home and mill." Following education through such contrasting, many employees applied the spirit of thrift and hard work in running a home to their work in the mill, and in the course of a month they put forward more than 3000 reasonable suggestions saving 70,000 kilowatt hours of electric power. Many industries and enterprises launched socialist work competitions with conservation of energy resources as their main objective, gaining good results from them. More than 3000 boilerrooms joined in the competition throughout the city; they strengthened, one after another, management over use of coal, made improvements in boilers, eradicated smoke and dust and brought about an overall decline in coal consumption of between 5 and 10 percent, and also greatly reduced pollution from the "three wastes."

2. Across-the-board Planned Supply of Energy Resources

At the present time, many plants throughout the city are on a fixed quota supply system for electric power, coal, petroleum, and coke with their consumption amounting to between 70 and 90 percent of the total consumption citywide. Running water is also on a planned supply system in numerous key enterprises. Under the impetus of a change from "use and then figure" of the past to "figure and then use," many plants have made a noticeable reduction in fuel consumption. Between January and the end of September this year total conservation of electricity citywide amounted to about 350 million kilowatt hours, of coal 390,000 tons, of coke 110,000 tons, and of petroleum 100,000 tons.

3. Conscientiously Broaden New Technology for the Conservation of Energy Resources

As of the end of August, heating equipment with a capacity of 86,000 kilowatts was using new far infrared technology for a remarkable decline in power consumption. Twenty-nine heating furnaces in the steel rolling industry have adopted new technology for keeping the furnace warm for an average decline in oil consumption per ton of steel from 78 kilograms last year to 65 kilograms this year. Quite a few plants have also aroused the masses to go all out in making small improvements and small innovations to prevent waste through leakage and making vigorous efforts to use waste heat. The glass utensils industry improved more than half of its furnaces, reducing oil consumption by 20 percent. Successful experiments with the easy to burn honeycomb briquets for home use have also opened a new road for conservation of coal and kindling wood.

4. Launch Investigation of the Use of Heat Energy

The 320 key enterprises in the industrial and transportation sector that are responsible for consumption of more than 80 percent of energy citywide conducted investigations. These investigations clarified energy uses,

exposed gaps where energy is wasted, and provided data for the formulation of a program to improve the energy utilization rate.

5. Actively Establish an Energy Management Organization and Strengthen Leadership in Energy Conservation Work

At the present time, each industrial bureau throughout the city has a deputy bureau chief and an energy department solely responsible for energy work. Numerous companies and plants have set up counterparts, the better to handle energy tasks. During the third quarter of this year, two separate conferences for the exchange of experiences in energy conservation were held citywide, and an exhibition on energy conservation was held to promote further development of energy conservation work.

Tianjin Asphalt Plant Cuts Power Consumption

Tianjin TIANJIN RIBAO in Chinese 2 Nov 79 p 3

[Article by Cui Lianyu [1508 6647 3768]: "Selecting Practical Measures and Making Great Efforts To Conserve Energy Resources"]

[Text] The Tianjin Municipal Works First Asphalt Plant has mobilized the masses and has come up with many ways to conserve electricity, coal, oil, gas and water, obtaining remarkable results. Between January and the middle 10 days of October, the amount and value of production from roasting petroleum reached 116 percent of the planned targets for the year. Production registered an increase of 26 percent over that of the same period a year ago. Value of the products registered an increase of 18 percent over that of the same period last year. As of the end of September, the amount of electric power used was less than that used in the same period last year by 162,800 kilowatt hours. The amount of gasoline used was less than that of the same period last year by 10,000 kilograms. The amount of coal used was less than the planned amount for the year by over 1,000 tons.

The First Asphalt Plant is a big user of coal, electricity, oil and water. This year, the plant has taken conservation of coal, electricity, oil, gas and water as an important aspect in increasing production and conservation. A leading group for energy conservation was established. Many methods were used to impart to the masses the significance of energy conservation and pushed forward energy conservation activities. The electrical engineering group conducted a general survey of the use of electricity throughout the plant to explore hidden potentials for conservation of electric power. It actively adjusted irrational use of electric power and solved the problem of "large horses pulling small carts." They replaced over 60 large 60-watt lightbulbs in offices, dormitories and warehouses with small 40-watt bulbs. They replaced over 20 street lamps and iodine-tungsten lamps which used more than 400 kilowatts with lamps using 250 kilowatts. They adjusted the power of the electric dust remover from 10 kilowatts to

4 kilowatts. At the same time, they eliminated some unnecessary lighting and electric stoves. By these measures, the amount of electric power used per cubic meter of roasted petroleum between January and September dropped by 16 percent compared to that of the same period last year. The total amount of electricity used by the whole plant during that period dropped by 43 percent compared to that of the same period last year. The vehicle fleet's dozen or so drivers carefully maintained and cared for the vehicles and operated them with the utmost of care. They did not allow the vehicles to waste gas. From April to September, they saved over 6,000 kilograms of gasoline.

In launching energy conservation activities, this plant conducted an in-depth analysis of the departments which used and wasted large amounts of energy resources and set up conservation measures. The 10-odd coal furnaces used in the plant's production, including the gas furnace, the asphalt processing furnace, the roasting and insulated thermal furnace and the drinking water boiler were not managed well in the past. Most of them wasted unknown amounts of energy. They were not inspected and examined and they wasted a lot of coal. To solve this problem, the plant manager personally organized a full-time staff and allied with the masses and conducted actual examination and inspection of each furnace's consumption of coal and established and revised the quotas for this consumption, and implemented distribution according to quotas and use of coal according to plan. For example, workers of the asphalt processing furnace burned coal strictly according to quotas and conducted inspections, screened the coal dust, substituted second grade coal for good coal, and improved their technique of burning coal. They reduced the daily consumption of coal of each insulated heat furnace from the original 120 kilograms to 95.7 kilograms. At the same time, they strengthened storage, issuing, and accounting of coal and pipe maintenance and reduced wastage and escaping of oil, gas, water and coal, thus conserving energy resources.

Big Fuel Oil Users Enforce Conservation Measures

Tianjin TIANJIN RIBAO in Chinese 2 Nov 79 p 3

[Article by Yin Quansheng [1438 0356 0524] and Chen Shengli [7115 0525 0448] "Medium Plate Factory Conserves Energy, Accelerates Production"]

[Text] Tianjin City's medium plate plant rationally arranged production and fought the battle of conserving fuel oil well to conserve fuel oil and assure production to seek production increases in fuel oil conservation. During the first half of this year, fuel oil consumption dropped month after month. In July, August and September, fuel oil consumption needed for the rolling of 1 ton of steel plate reached a nationwide [low] level for this kind of steel plate plant. The state's production plan was fulfilled 100 days ahead of schedule and the product quality and cost of consumption have reached the best level in history. Products of thin specifications more than doubled compared to the same period last year.

This plant has two fuel oil heating furnaces with a consumption of 2,400 tons per month. It is a big consumer of fuel oil. In the movement to increase production and to conserve, the Party committee of the plant recognized that conservation is an important part of assuring production.

An energy conservation group with the participation of the leadership of each scientific laboratory, work section, full-time technicians and veteran workers was set up and a deputy director of the plant was assigned to lead it. The use of fuel was analyzed at fixed intervals and the amount of fuel used was calculated after every shift; results were made public after every shift, a summary was written every 10 days and criticism and comparison were done every month. In April of this year, the amount of fuel allocated by the state plan for them was far less than that required to satisfy production. The Party committee of the plant and the energy conservation group held a meeting and mobilized the masses to explore the potentials and to conserve. They went to the front lines of production and helped workers establish operational methods to save fuel oil: frequent inspections, controlled heating of the billets inside the furnace at all times, frequent adjustments, controlled temperature inside the furnace at all times, coordination and closely coordinated work procedures to control the speed of rolling steel. To allow fuel oil to provide a maximum amount of heat, they built a steam drum to lower the viscosity of the fuel oil. by means of rational proposals that gathered ideas and broke away from the old method of concentrated heating of steel of thick specifications. They used the method of appropriate heating of thin and thick pieces together and fully utilized the furnace temperature to assure monthly production. In addition, they also used plastic to supplement the furnace wall and sealed the heating furnace. They also used expandable perlite to increase the layer of insulation of the heating furnace to further lower fuel consumption. At the same time, 14 improvements were made in the body of the furnace, the furnace walls, the furnace gate, the water pipes inside the furnace and the fuel injection nozzle to prevent runaway fires, creeping fires and temperature dispersion. Staff members of this plant also watched the big items and managed the small items, and launched a competition to save every drop of oil. This further mobilized the activeness of the broad staff and workers to increase production and conserve and yielded remarkable results. From January to September, the entire plant conserved a total of over 4,500 tons of fuel oil, an average reduction of 27 jin in the amount of fuel oil consumed per ton of steel plates.

Metal Plant Boosts Production, Reduces Power Consumption

Tianjin TIANJIN RIBAO in Chinese 2 Nov 79 p 3

[Article by Wu Xinsheng [0702 2450 3932] and Zhou Yuyi [0719 3768 5030]: "Revamping Old Techniques; Saving Power While Increasing Output"]

[Text: The Eighth Metal Products Plant's staff and workers have improved technology, lowered energy consumption and realized power conservation and increased production. Between January and September, the plant

completed 89.79 percent of the planned annual production, an increase of 50 percent over the same period last year. The amount of power used to produce each ton of lead wire dropped by 431 kilowatt hours of electricity compared to that of the same period last year, a total saving of 600,000 kilowatt hours of electric power.

This plant has five well-type annealing electric furnaces for heat treatment. Because of underground water beneath the furnaces and the lack of an insulating layer above, heat dispersion was great as was the consumption of electric power. To solve this problem, they "clothed" the well type furnaces by adding support to the bottom of the furnaces to insulate them from the underground water, and changed the old technique of cutting off the power supply to lower temperatures inside the furnace when the iron wire emerged from the furnace. A new technique of packing the iron wire while still hot and removing the iron wire from the furnace for natural cooling was used to shorten preheating time. At the same time, the enclosed wiring canister was improved, and the capacity of the enclosed wiring was increased. This increased production and conserved electricity.

Energy Conservation Awards Spur Rolling Mill's Production

Beijing BEIJING RIBAO in Chinese 3 Nov 79 p 2

[Article by Yan Qixiang [7051 0796 5046] and Shi Xin [4258 2450]: "Nine Hundred Tons of Heavy Petroleum Conserved in 10 Months. Beijing No 1 Steel Rolling Mill Implements Awards for Petroleum Conservation"]

[Text] The Beijing No 1 Steel Rolling Mill has vigorously launched a campaign to increase production and practice conservation to bring about a reduction by 5 kilograms over the state-prescribed norm in the consumption of heavy petroleum for each ton of steel rolled. Between January and September of this year, steel production increased 20 percent over the same period last year and with a saving of more than 900 tons of heavy petroleum.

In order to promote heavy petroleum conservation, this mill implemented awards for its conservation. In shops where actual consumption of petroleum was below the norm handed down by the mill, the mill would make an award equivalent to 5 percent of the value of the cash saving. Between April and July of this year, a total of 669 tons of oil was conserved throughout the mill with a value of more than 41,000 yuan. Of this, 2,099 yuan was used as awards for distribution to employees with outstanding accomplishments in the conservation of petroleum.

Eight comrades in the supply section and the power section were active in proposing conservation measures and in assisting the appropriate department enhance its management of heavy petroleum, thereby making an achievement. They were awarded a one-time payment of 90 yuan. In cases where

short loading of vehicles was discovered, or where there was a 3 percent discrepancy on receipts and expenditures or profits and losses, or where amounts were found to be incorrect upon weighing, or where losses occurred through runoff, emissions, drips, and leaks, criticism and education of offenders was given and their bonuses for the month were either entirely or partially deducted. In April of this year oil trucks were shortloaded by 14 tons and the mill deducted all awards for that month from the haulers.

This mill has also applied petroleum consumption norms to its groups and teams and has printed these norms on petroleum coupons for issuance to workers to keep and use in order to facilitate checking. The oil depot supplies oil on the basis of these coupons. When production is in excess of plan, the supply section increases issuance of coupons for excess production so as to make an equitable increase in supply. If there is consumption in excess of the norm, the shop must tender a written report explaining the reasons and obtain the mill director's approval otherwise oil supply will be halted.

'Serious' Energy Wastage Noted Despite Gains

Beijing BEIJING RIBAO in Chinese 3 Nov 79 p 2

[Article: "Make the Greatest Economic Impact with the Least Consumption of Energy Resources"]

[Text] Today's newspaper has printed achievements in the conservation of heat energy and electric energy on the part of the Beijing No 1 Steel Rolling Mill and the Yongdingmen Railroad Station. Their spirit of intense concern for energy conservation merits study by all. The State Council's decision to launch the "Energy Conservation Month" campaign this month requires a positive response from all fronts and all units in this city to make outstanding achievements in the conservation of energy resources.

This city has made definite achievements this year in the conservation of energy resources. Between January and September, there was a saving city-wide of 30,000 tons of coal, 13,000 tons of heavy oil, and 100,004 million kilowatt hours of electricity in fulfillment of more than 80 percent of the total conservation plan for the entire year. But in many enterprises, waste of energy--notably waste of coal, electricity and petroleum--is very serious. Fuel consumption has yet to reach its best levels ever. In many units where equipment has not been maintained for years, runoff, emissions, dripping, and leaking can be seen everywhere, and furnace ashes contain as much as 50 to 60 percent coal. In one steel rolling mill, furnace ashes contained in excess of 65 percent coal, calculated to be 20 tons of the ashes produced daily. At the very least, between 3,000 and 6,000 tons excess consumption of coal would occur in the course of a year. If all enterprises and units were to reduce the coal content of their ashes below 10

percent and eradicate the running, emissions, dripping, and leaking, a saving in raw coal amount to several tens of thousands of tons could be effected citywide each year.

Energy resources are a key factor in the growth of industrial and agricultural production and in the improvement of the livelihood of the people. When energy resources are insufficient, production growth becomes difficult and the speed of construction under the Four Modernizations can be directly affected. Resolution of this conflict requires further development of energy resources. This is something that must be given serious attention, of course, but it also requires expenditure of quite a bit of money and is not something that can produce desired results at once. At the present time, as far as enterprises are concerned, special emphasis must be given to energy conservation. When the state gives an enterprise so much raw material, coal, electricity, and petroleum, it should put out so many products and make so much of a contribution, making every effort to conserve those raw materials and to conserve coal, electricity, and petroleum. Otherwise, the movement to increase production and practice conservation cannot be very thorough and the making of a greater contribution becomes an empty phrase.

Many years' experience attest that good performance in the conservation of energy resources requires, first of all, that leadership at all levels accord it fullest attention and take vigorous measures. There has to be a rapid change in the situation of the past in which there were loud outcries that energy resources were inadequate while a great waste of energy resources was taking place at the same time. A "coal mess," an "electricity mess," and a "petroleum mess" are to be opposed, and coal, petroleum, and electricity resources should be rationed in their supply the way grain is, with advanced consumption quotas formulated and strictly enforced. Fixed quotas should be implemented in every enterprise, every shop, and among every factory group and team, with conscientious checking being done and a system of awards and punishments being instituted. Only in this way can energy conservation work bring visible results.

Advanced Units Serve as Example for Others

Tianjin TIANJIN RIBAO in Chinese 7 Nov 79 p 1

[Article by Liu Wei [0491 4885]: "Summarize and Spread Advanced Experiences in Energy Conservation in a Timely Manner"]

[Text] The city's textile machinery and equipment company has led the work in conscientiously grasping "energy conservation," and has summarized and popularized advanced experiences and achieved results. From January to September, the company completed ahead of schedule the year's task of conserving coal and electricity. A total of 819 tons of coal and 972,000 kilowatt hours of electricity were conserved. The total value of industrial production increased 22 percent over that of the same period last

year and energy consumption dropped 14 percent from that of the same period last year.

Since [the beginning of] this year, the company has established a leading group in energy conservation and each plant has also established corresponding agencies for the management of energy resources. The leadership of the company personally led a team to organize a mutual inspection group consisting of 69 persons reassigned from the basic units and investigated and gained an in-depth understanding of efforts to conserve coal and electricity at each of the 19 subsidiary units of the company. Measures to "conserve energy" were studied and implemented at each and every plant. Advanced models were grasped, summarized and popularized. The Fourth Accessory Plant made do with whatever was available and designed its own solar energy bath. The Seventh Accessory Plant developed the spirit of "one-tenth of 1 cent." The boiler for drinking water was rebuilt to serve both as a boiler for drinking water and for bath water. It became a highly efficient boiler that conserved coal, not only solving the problem of baths for staff members and workers but also saving 34 tons of coal a year. With the support and assistance of the leadership of the company, the leadership and workers of the implements plant joined together and used far infrared rays for all plastics injection equipment, saving 180,000 kilowatt hours of electricity a year. The leadership of the company grasped these models and held timely on-the-spot meetings and summarized and exchanged their experiences in energy conservation and forcefully and profoundly pushed forward the work of "energy conservation" throughout the entire industry.

Rebuilt Boiler Helps Dyeing Plant Cut Energy Wastage

Tianjin TIANJIN RIBAO in Chinese 7 Nov 79 p 1

[Article by Wang Junfeng [3769 0193 1496]: "Improving Boilers To Conserve Coal"]

[Text] Since last year, the city's No 2 Bleaching and Dyeing Plant has actively improved its boilers, reducing the amount of coal consumed from over 3,000 tons annually to over 2,000 tons annually, and raised the heating efficiency of the boilers by 83 percent, surpassing the designed capabilities of the boilers when they were first built. To bleach and dye one piece of cotton yarn consumed 193 kilograms of coal last year but this has dropped to 174 kilograms.

This plant is a small plant with only over 200 workers. It is responsible for reprocessing tasks of bleaching and dyeing of daily cotton products produced by the cotton industry of the city. Steam is the major heat source for the plant's production. The boiler is one of the major equipment of the plant. Based on last year's rebuilding of the boiler, and to further solve the problem concerning complete burning of coal inside the furnace chamber, they changed the tuyere switch from a horizontal to a

vertical position after several dozen trial improvements this year. Air can now be evenly blown into the furnace chamber and the coal inside can burn fully. At the same time, the furnace chamber was further improved so that the heating efficiency was raised by over 80 percent and the temperature inside the furnace chamber can reach 1,460 degrees and the amount of combustible residue in the dust dropped from the previous 40 percent to 15 percent. The amount of coal consumed for one piece of cotton yarn dropped drastically. Under normal production conditions, the plant can save nearly 20 tons of coal a month for the nation. Recently, they also installed electricity meters inside the boiler room to accurately measure the amount of coal used every day, a reversal of the previous situation in which the amount of coal used was not checked.

Cotton Mill Finds Clean Boilers Conserve More Coal

Tianjin TIANJIN RIBAO in Chinese 7 Nov 71 p 1

[Article by Zhang Zhikuan [1728 1807 1401]: "Boiler Mill Finds Clean Boilers Conserve More Coal"]

[Text] The power shop of Tianjin's No 1 Cotton Mill has learned advanced foreign techniques and is using chemicals to blow dust from the boiler with good results.

A large amount of soot adheres to the inside of a boiler after burning of coal. This soot envelops the pipes on the walls of the boiler. It not only erodes the steel pipes of the boiler but also reduces the boiler's heating efficiency. To solve this problem, this shop used a steam dust blower three times a day to blow away the dust. The blower used over four tons of steam and the boiler still could not be cleaned thoroughly. The heating efficiency of the boiler decreased as time passed. Thus, every 1-2 weeks workers had to clean the boiler by hand and the operation of the boiler had to be stopped on holidays. Recently, the textile industry implemented the "four shifts and three rotations," and the time for stopping the operation of the boiler was eliminated. What about the problem of cleaning the dust? The leadership of the shop mobilized the masses to contribute their ideas and plans and organized the cadres, technicians and workers to learn from the experiences of outside units. Inspired by the experiment of the Tianjin Chemical Plant in using chemicals to blow away dust, they liberated their thoughts and courageously learned advanced Japanese techniques. They mixed their own cleaning agent to remove soot and spent a very short time developing the chemical agent and its sprayer on a trial basis.

This shop used the chemical to blow away dust and clean the inside of the boiler, saving over four tons of steam a day and raising the heating efficiency of the boiler. Smoke temperature dropped from the previous high of 220 degrees to the present high of 180 degrees; each ton of coal produces

230 kilograms more steam and 1.6 tons of coal is conserved a day. After 2 months of experimenting, the boiler was shut down for inspection. All heated surfaces inside the boiler reached by the chemical were clean and there was no soot or other material adhering to those surfaces.

Zhengzhou Light, Textile Industries Focus on Saving Energy

Beijing GONGREN RIBAO in Chinese 8 Nov 79 p 2

[Article by Ma Qingyun [7456 7230 0061] and Peng Qiyan [1756 0796 3508]: "Industrial Production Rapidly Expands in Zhengzhou. Increases in Production in Light and Textile Industries with Concomitant Conservation of Energy Resources. Overall Industrial Production Grows 14.9 Percent in Value Between January and September Over the Same Period Last Year To Create the Highest Level Ever for the Same Period"]

[Text] In the campaign to increase production and practice conservation, Zhengzhou City on the industrial and transportation front in Henan Province has managed to increase production in the light and textile industries while at the same time conserving energy resources. Throughout the city industrial production is rapidly expanding. Total value of industrial production for the period January through September showed an increase of 14.9 percent over the same period last year. Of this, light and textile industries grew by 18.3 percent, showing a profit 25.28 percent greater than for the same period last year to create the highest level in history for the same period.

Zhengzhou is first among six large textile bases nationwide. Output value of its light and textile industries amounts to more than half the total value of the entire city. In the campaign to increase production and practice conservation, the Zhengzhou Municipal Committee has started from reality to increase production of its light and textile industries on the one hand and to conserve its energy resources on the other, to place itself in the forefront of all cities and prefectures in Henan in the development of industrial production this year.

In acting to increase production of the light and textile industries and conserve energy resources, Zhengzhou first gave attention to use of investment funds and electric power and the supply of raw materials to assure growth in production in these industries. This year, the municipal committee decided to use 4.08 million yuan to develop the light and textile industries. The Zhengzhou Tobacco Plant had an unreliable electric power supply, and for every day that production was halted the nation lost 400,000 yuan in output value. The municipal committee decided to allocate a sum of money to a special fund to be set up for the plant so that it could have a reliable electricity supply. Insufficient steam was a key problem that wracked the textile and printing industries of the entire city. Several times the

municipal committee sought out responsible departments in charge to undertake a study of the problem and through a combination of increased steam generation and conservation plus equitable regulation of use, steam use was increased by 50 tons this winter in textile and printing plants, virtually assuring production needs. Following the Nationwide Conference on Labor Exchange, Increased Production and Conservation, the municipal committee once again devoted efforts to solve problems in raw materials and investment funds for two light industries, solving a problem of the clothing industry with 780,000 meters of cotton cloth and a 500,000 yuan loan. As a result, the more than 90 plants of the two light industries had an increased production of 8.4 percent in September over August. Because municipal leadership organizations conscientiously acted on behalf of the light and textile industries, output of the principal products of these industries showed a great increase between January and September of this year as compared with the same period last year without any sacrifice in quality.

In the saving of energy resources, the municipal committee made conservation of electricity, coal, gas, and petroleum its key points for the conservation of energy. Electricity consumption by the Zhengzhou aluminum plant amounted to one-third the total for the entire city, and was a notorious "devourer of electricity." The plant party committee pursued increased production on the one hand and conservation on the other and aroused employees to go all out in a campaign of innovation to bring potential to light, while at the same time strengthening management to bring about a huge decline in electricity consumption. By the end of September, a total saving of 21.33 million kilowatt hours of electric power had been realized, the highest in the entire country.

Cut in Energy Usage Spells Profits for Chemical Plant

Tianjin TIANJIN RIBAO in Chinese 8 Nov 79 p 1

[Article by Hou Yanren [0186 1693 0088]: "Vigorous Promotion of Power Conservation; Make Up Deficits and Increase Surpluses"]

[Text] The city's plastics materials chemical plant has thought of many ways to reduce power consumption and has changed the backwardness of the industry. Between January and September of this year, production of carbide registered an increase of more than 1,700 tons over that of the same period last year, 2,940,000 kilowatt hours of electricity were conserved. The cost of the products dropped and the enterprise turned losses into profits.

This plant mainly produces carbide, caustic soda and plastics as well as chemical industry raw materials and is one of the largest power consumers in the city. The plant consumes over 60,000 kilowatt hours of electricity for production every day. For the past 10 years and more since its establishment, this plant operated in the red year after year because of chaotic

business management and unstable operation of the equipment. This year, the plant conscientiously analyzed the reasons for the losses during that lengthy period on the basis of reorganizing business administration. Everyone saw clearly that the entire plant's expense for electric power constituted over 60 percent of the cost of its products and to turn the situation around, reduction of power consumption was the key. When the work of power conservation is done well, costs will drop and profits will increase, and the enterprise will turn losses into profits. To strengthen leadership of power conservation work, the plant established a power conservation leadership group. Each shop also established a power conservation group. At the same time, electrical engineering works scattered throughout the shops were centralized and an electrical engineering works section was set up and the electrical engineering maintenance work was strengthened.

The carbide shop of this plant consumes over 50,000 kilowatt hours of electricity for production every day, constituting 80 percent of the entire plant's electricity consumption. At the end of last year, the carbide furnace broke down frequently and unproductive consumption of electricity reached 20 percent of the amount of electricity used for production. This not only increased the amount of electricity consumed for the production of a ton of carbide, the shop was also fined over 3,000 yuan a month by the electric power department. To overcome this "electricity tiger," the plant's leadership held over 20 meetings to move the masses to investigate the causes, drew up plans and organized concerned personnel to learn from fraternal units. By repeated experiments, everyone participated in the rebuilding of the wiring boards of the carbide furnace and increased electrical conductivity. A cooler was also installed inside the wiring board and successfully solved the problem of power shut-offs and assured normal operation of the carbide furnace. Now, this carbide furnace has reduced its unproductive consumption and each month this shop receives over 1,000 yuan in rewards from the electric power departments. As of the end of September, the shop had conserved 2.59 million kilowatt hours of electricity.

'Scientific Management' Reduces Aluminum Plants' Power Demands

Tianjin TIANJIN RIBAO in Chinese 8 Nov 79 p 1

[Article by Zhang Jiming [1728 4949 2494]: "Scientific Management, Planned Use of Power"]

[Text] The Tianjin Aluminum Products Plant has implemented scientific management and planned use of power and has achieved good results in increasing production and conserving electric power. Since July of this year, the plant's overall production increased 11.4 percent over that of the same period last year, and the amount of electricity consumed dropped by 5.8 percent from that of the same period last year.

Since July of this year, this plant implemented planned use of electric power. The total amount of electricity used was less than the highest amount of electricity used in the past by 25 percent. Implementation of planned use of electricity requires as a prerequisite a set of scientific management methods. With the help of concerned departments, they installed an overload automatic shutoff alarm with a power measuring meter. In shops that consumed greater amounts of power, they installed seven electric meters. To strengthen leadership and management, a power conservation management network was set up in the plant under the personal responsibility of the plant manager. Four full-time staff members were assigned to be responsible for the actual work. Each shift and group also added a member in charge of electric power conservation and the recording of the amount of electricity used by each group and management of use of electricity.

This plant separated the peak usage of electricity according to the actual conditions of production of the plant. The six shifts of the morning, day and night were changed to five shifts in the morning, six shifts during the day and seven shifts at night. Besides increasing a night shift for pressing operations, other tasks not affecting normal production were also rearranged to be performed at night. In addition, this plant divided all equipment using power into equipment that uses a limited amount of electric power, equipment that retains power and equipment that uses off-peak power according to actual use of electricity in production and treated each category of equipment accordingly. When overloading occurs, the off-peak equipment is first shut off. A "power conservation tag" was placed on every piece of equipment and actual times for using power and standards of conservation of power were set up. Equipment that operated only at night was strictly controlled during the day and violations were punished. Implementation of these management methods changed the past situation in which the use of electric power was not checked and conservation of electric power had no standard. Especially, the box type electric stoves, reversible rollers and oxidation troughs that use greater amounts of electricity in the plant were regulated according to plan. In August, September and October, electric power consumption averaged a monthly decrease of 12 percent.

Tianjin Metallurgical Bureau Focuses on Oil Conservation

Tianjin TIANJIN RIBAO in Chinese 8 Nov 79 p 1

[Article by Chu Guangzhao [2806 0342 3564] and Chen Shengli [7115 0524 0448]: "Promoting and Adopting New Oil Conservation Technology"]

[Text] The Tianjin City Metallurgical Bureau has conscientiously grasped the work of conserving oil in the steel rolling industry and popularized and utilized new techniques to conserve oil, launching small changes and small reforms in conserving fuel oil. From January to October, the entire industry conserved a cumulative total of over 17,000 tons of oil.

The steel rolling industry of the metallurgical system has 17 fuel oil heating furnaces which consume over 170,000 tons of fuel oil each year, accounting for 70 percent of the total amount of oil consumption of the entire system. It is one of Tianjin's larger fuel oil consumers. This year, the targeted amount of fuel oil allocated to this bureau by the state could not meet production needs. Facing this situation, the bureau took steps to arrange production in a rational manner and took fuel oil conservation work as the major task. Oil conservation groups made up of workers, full-time technicians, and the heads of shops and laboratories at nine units of the steel rolling industry were established under the leadership of the plant managers to conscientiously grasp the work of oil conservation. Some plants even adjusted and rearranged production and stopped the use of oil by nonproductive facilities to assure the use of oil for production. The No 3 Steel Rolling Plant's leadership and full-time technicians summarized the actual production situation of their own plant and made several visits to Shanghai and Beijing to learn the experience of oil conservation of advanced units. They motivated the entire plant's staff members and workers to conserve oil and to attack the weak links in the plant and implemented a total of 29 energy conservation measures including exploring the potentials for conservation, rebuilding, and the use of new techniques at different times. These measures greatly reduced the consumption of oil. After the plant's five heating furnaces were rebuilt, the heating efficiency was raised, oil consumption dropped an average of 20 percent and between January and October, over 3,800 tons of fuel oil were conserved.

This bureau placed heavy emphasis on the work of popularizing new oil conservation technology. They popularized and made use of moldable composite wrapping material, reduced components in the water cooling equipment, used automatic temperature controls and tight sealings for the furnaces to retain heat and retrieved surplus heat, etc., totaling new technologies and measures of oil conservation. The use of moldable composite wrapping material alone reduced fuel oil consumption by an average of 20 percent. They held many meetings to exchange oil conservation experiences in the steel rolling profession, popularized advanced experiences in fuel conservation and were successful in making the entire profession benefit from the results from the success of one plant's experiment. Popularizing automatic control of furnace temperatures not only conserved large amounts of fuel oil but also stopped the "free heating of steel," "safe heating of steel" and "overheating steel" of the past which produced problems in quality. The quality was elevated. The technique of insulating the furnace and retaining temperature was not regarded as important in the past. After the fuel oil conservation movement was launched, comrades, cadres and workers of the technical departments of each plant of the steel rolling industry got together and utilized pearlite material to add a layer for heat insulation on the outside of the heating furnaces. The results were good: each heating furnace can now save 200 to 300 tons of fuel oil a year.

This bureau, in grasping the fuel oil conservation work in the steel rolling industry, combined fuel oil conservation work with material incentives and implemented fuel oil conservation awards, mobilizing the masses of staff members and workers in fuel oil conservation. Each plant tightened control over its fuel oil and fuel oil conservation work, strengthened the staff, strengthened accounting work, and implemented records for incoming oil, for burning of fuel oil, for fuel consumption according to set quotas, and each shift and group checked and accounted for the fuel oil. By giving rewards for fuel conservation efforts, a wave of enthusiasm in the competition for fuel conservation swept through the entire profession. During the first half of this year, the average amount of fuel oil consumed per ton was lower than that of last year by 5 kilograms, and in July, August, September and October, the amount was lower than last year's figure by 8 kilograms. The amount of fuel oil consumed by the No 1, No 2, No 3, No 4, No 5 Steel Rolling Plants' 8 fuel oil shops was favorable compared to similar industries throughout the nation.

Conversion From Oil to Coal Eases Petroleum Consumption

Beijing BEIJING RIBAO in Chinese 9 Nov 79 p 4

[Article: "Tianjin Industrial and Transportation Sectors Achieve Remarkable Results in Energy Conservation"]

[Text] The industrial and transportation departments of Tianjin Municipality have taken effective measures to save energy in every possible way, and in doing so, have achieved outstanding results. From January to September of this year they saved over 185,000 tons of coal, 34,600 tons of gasoline and over 97 million kilowatt hours of electricity.

The industrial and transportation departments of Tianjin Municipality found out that there were 71 enterprises in the municipality with an annual coal consumption of over 10,000 tons, and that their consumption made up 50 percent of the total consumption of coal by all industrial enterprises in Tianjin. The 18 large consumers of gasoline consumed 55 percent of the entire consumption in the municipality. The 42 large consumers of electricity used 60 percent of the electrical power used by all industries in the municipality. The economic committee of the municipality prepared a set of energy consumption record cards for each of the units, organized the available technical capacity to improve boilers and other equipment, and was at all times ready to solve problems in energy conservation. It also dispatched personnel to assist these units in strengthening management so as to have all "coal hogs," "electricity hogs," and "gasoline hogs," speedily reduce their consumption.

While taking action in key units, the industrial and transportation units of Tianjin Municipality also paid attention to certain weak sectors in energy conservation. There is a fairly large number of oil-burning boilers

in Tianjin Municipality. To save oil, the relevant departments converted some of the oil-burning boilers to coal-burning boilers; 12 large boilers have already been so converted. In some units, too much electricity is wasted and no amount of criticism has had any effect. To restrict excessive power loads, installed power-limiting devices were installed.

The industrial and transportation units of Tianjin Municipality also established a link between energy conservation and the material benefits to staff and workers, thus mobilizing enthusiasm for energy conservation among the staff and workers.

In order to conserve energy, the economic committee of Tianjin Municipality, in coordination with various industrial bureaus, also actively spread knowledge of new energy conservation techniques.

Demand in Northeast Points Out Need for Power Conservation

Beijing GONGREN RIBAO in Chinese 9 Nov 79 p 1

[Article: "Great Potential for Conserving Power on the Industrial Front. Per Unit Consumption of Electricity for the Products of Some Industries Has Risen; Departments Responsible for Industry Point Out Need To Continue To Adopt Effective Measures and Strive To Conserve Power and Use Power Rationally"]

[Text] Statistics from electric power departments show that though great achievements have been registered this year in the conservation of electricity, developments have been uneven with some industries still having a fairly large potential for improvement. During the first half of the year, some industries showed a rise in the per unit consumption of electricity to make goods. Because power consumption per unit of goods produced rose in the steel, nonferrous, chemical, construction materials, coal, and petroleum industries, a concomitant increase in electricity occurred amounting to 2.282 billion kilowatt hours. Were this amount of power to be used in the light and textile industries somewhat more than 13.5 billion yuan worth of goods could be created.

Aggregate unit consumption of electricity per ton of raw coal produced during the first half of this year showed an increase of 2.38 kilowatt hours over the same period last year for an increase in electricity consumption totaling more than 720 million kilowatt hours. Aggregate unit consumption of electricity per ton of crude oil produced showed an increase of 4.89 kilowatts over the same period last year for an increase of more than 460 million kilowatt hours. Planned steel production this year was about the same as actual production last year, but 1.56 billion more kilowatt hours of electricity were used during the first half of this year than for the same period last year. Aggregate unit consumption of electricity per ton of 8 nonferrous metals produced showed an increase by 708.3 kilowatt hours for an increase in consumption of electrical energy over the same period last year of 390 million kilowatt hours. The building

materials industry, as represented by cement products, had an aggregate increase in per unit consumption of electricity per ton over last year of 5.4 kilowatts. The textile industry, as represented by cotton cloth, showed an increase in aggregate unit consumption per length over the same period last year of 28.86 kilowatt hours.

Part of the increased aggregate consumption of electricity per unit of goods produced is practical, as for example, adjustments in the proportion of excavation done in the mining industry, increases in water flooding and extensions of oil conduits in the petroleum industry, the increase in mechanization and automation in various industries, and reasonable adjustments in raw materials for products and the make-up of finished products. But management is lax, not enough attention is being given to electricity conservation, and electric power is wasted as a result. In a study done in the northeast, of 246 principal products, 131 of them required more electricity per unit produced than for the same period last year, and 160 items used more electricity per unit produced than the best consumption on record. Per unit consumption of electricity for some products showed wide disparity between high and low. Electric steel from the Dalian Steel Plant showed a unit consumption per ton during the first half of the year of only 576 kilowatt hours, but some enterprises consumed in excess of 1600 kilowatt hours. Chemical fertilizer produced by the chemical fertilizer plant in Jianping County in Liaoning Province requires 1,374 kilowatt hours of electricity per ton produced, but some chemical fertilizer plants used in excess of 4000 kilowatt hours. For nonferrous metal and aluminum, consumption of electricity per unit of product is high, there had been a great increase in electricity consumption principally because some large aluminum plants where per unit consumption of electricity was low had been operating under capacity while some small aluminum plants where per unit consumption of electricity was high "ate and drank their fill."

Following the nationwide Work Conference on Industry and Transportation, Increased Production and Conservation, every region and every industry adopted positive measures and strived to reduce consumption of electricity per unit of product, thereby causing a turn for the better in electricity conservation work during the third quarter. The metallurgy sector took stern measures for the conservation of electricity in making electric steel, alloy steel, and aluminum through electrolysis. The coal industry also adopted positive measures to reduce consumption per unit produced and registered a decline during the third quarter in the consumption of electricity per unit of raw coal produced, but it is still higher than the per unit consumption for the same period last year. Departments responsible for industry have pointed out that there is still a quite large potential for the conservation of electricity in every trade and industry and that effective measures must continue to be adopted to strive to conserve electricity and use it wisely.

Beijing Gas Company Steps Up Meter Installation Effort

Beijing BEIJING RIBAO in Chinese 10 Nov 79 p 1

[Text] The Beijing Gas Company has emphasized the strengthening of metering installation for the 15,000 gas users and has thus far conserved 5.4 million cubic meters of gas. This is equivalent to conserving 5,100 tons of coal, and the amount of gas thus saved can be used to serve 10,000 new users. From January to September 1979, Beijing extended service to more than 7,600 new gas users, yet the actual gas consumption was 1.32 million cubic meters, less than projected.

Presently Beijing has 82,000 household gas users, and in the past gas consumption was quite high because a great majority of users did not have gas meters. With cooperation from sister units, the gas metering plant of the Beijing Gas Company started mass production of gas meters in June 1979 and thus created an advantageous environment to enforce gas metering management.

The installation of gas meters increases the role of units and households in their responsibility to conserve gas. If city dwellers use less gas, they guarantee their future supply, conserve gas for the country, and save on their own fuel budgets. Some industrial users emphasize conservation and obtain good results. The Beijing dyeing plant was switched from using metal net-type burners to infrared-ray burners, thus saving more than 6,700 cubic meters of gas per month. The forging section of the Beijing internal combustion engine general plant recently adopted new forge residual heat annealing technology which can save 500,000 to 600,000 cubic meters of gas. The Beijing chemical plant has increased production by 33.9 percent from January to September 1979 and reduced gas consumption by 9.8 percent through good management, higher operating standards and improved furnaces.

Beijing Utilizing Residual Heat

Beijing BEIJING RIBAO in Chinese 10 Nov 79 p 1

[Article by Li Rugan [2621 1172 1626], Jiang Haibo [1203 3189 3134], and Shu Xiongya [5289 4767 2814]]

[Text] The Beijing residual heat utilization program has developed rather well in recent years. As of the end of October 1979, there were 145 projects to utilize residual heat, thus conserving 200,000 tons of coal for the state and conserving more than 29,000 tons of heavy oil. In addition to previous applied residual heat items, currently Beijing uses 205 trillion kilocalories annually, or 53.5 percent of the usable total residual heat resources in Beijing.

Various enterprises and units have come up with all kinds of ways to conserve energy resources through the use of residual heat. The first method

is to use residual heat from hot flue gases. The Beijing heavy machinery plant has installed three residual heat boilers in the smoke channels of the three heating furnaces, conserving 5000 tons of coal with steam production of 10 tons per hour. The second method is to utilize the residual heat from high temperature products and furnace residue. The Nanhу Canal Brick Factory uses the heat generated during the cooling down period of the bricks in the tunnel kiln to generate 2.8 tons of steam hourly, substituting the service of a coal burning boiler. The third is the use of residual heat from waste water and waste gas. According to the survey done by the 11 factories of the municipal knitting bureau, 110,000 square meters of building space was heated by waste and water during the winter. Fourth is the use of residual heat from chemical reactions. Two Beijing chemical factories used benzyl anhydride chemical reaction heat to install a 10-ton residual heat boiler which conserves more than 6,500 tons of coal annually. High temperature heat released during the process of manufacturing sulfuric acid in the sulfuric acid shop of the dyeing plant to set up two residual heat boilers which generate 12 tons of steam per hour for a saving of 14,000 tons of coal annually. In addition, some enterprises have obtained rather good results in utilizing residual heat from fuel gas and coolants. Actual practice shows that tapping latent power potential requires small investment and reaps big benefits and can save a great amount of energy resources. At present, 46.5 percent of the residual heat resources in Beijing has not been fully utilized and this is a very big loss. Some units let a large quantity of residual heat dissipate, yet everyday they complain about an insufficient allocation of fuel and other units have a poor grasp of the use of residual heat. For the last 2 years, Beijing has been subsidized by the state to take steps to use residual heat and up to now there are still 26 unfinished projects. There are even some newly built industrial and capital construction projects that have not taken into consideration the use of residual heat and all these have yet to be improved upon.

Tianjin Power Bureau Conserves Coal and Power

Tianjin TIANJIN RIBAO in Chinese 29 Oct 79 p 1

[Text] Each power supply unit of the Tianjin Electric Power Bureau, on the basis of the best performance in coal and power consumption last year, posted new achievements in conserving coal and power. From January to September 1979, it took 7 grams less coal to generate 1 kilowatt hour of electricity, for a saving in coal of 23,085 tons. Factory electricity utilization rate and power supply line loss rate has been greatly lowered, conserving 27,370,000 kilowatt hours of electricity.

This year, besides continuing the carrying-out of the 'safety first' policy, the bureau has put effort into the modernization, improvement, and tapping of new potential in existing equipment and facilities. By the end of September, the whole bureau had applied 69 large coal and power

conservation technical measures such as condensers, high pressure heaters, dust removers, high-efficiency blowers and waterpumps, creating good conditions for safety, economy and full utilization.

Steam condensers and high pressure heaters are important auxiliary equipment which lower the consumption of electricity and coal and increase the efficiency of machinery. In the past there were serious crust formations inside the copper tubes of the condenser which greatly increased the power and coal consumption rates, lowered the generating power of the machinery and limited each set of machines to 80 percent efficiency. Due to defects in the installation of the high pressure heaters, serious leakage significantly lowered the input efficiency, thus wasting a lot of residual heat. In order to fully demonstrate the economical advantages of this equipment, and to guarantee high efficiency operation of the power generating plant, this bureau has since 1978 made a joint effort to initiate plant examination and repair, to mobilize manpower, to promote the new technology of using rubber ball cleansing condensers, to tap the latent power of high pressure heaters. To date, 11 out of the 13 5,000-kilowatt machine units have adopted the new rubber ball cleansing condenser technology and the input efficiency of the high pressure heater has been greatly increased. The four sets of machinery of the Tianjin No 3 Power Plant have all installed rubber ball cleansing facilities with the same water temperature, a drop from 20 to 5 degrees at the exhaust port after the installation of the rubber ball cleansing facility greatly increases the work-efficiency of the condenser. One 100,000-kw set of machines can daily conserve 18 tons of coal. The Army grain supply power plant has placed high priority on tapping the latent power of high pressure heaters. The whole plant has been mobilized to attack this problem and they have conducted plant examinations and repairs, and made improvements. They have eliminated a lot of defects and greatly raised both equipment and health levels. From January to September 1979 the input efficiency of the four high pressure heaters in the plant stabilized at around 95 percent. This kind of tapping of latent power in the equipment has raised the water supply temperature of the boilers by 60 degrees, bringing the coal conservation capacity in each installation to 8 tons daily, together with rubber ball facilities, high efficiency blowers, and remodeled water pumps, the power and coal conservation indicators in the plant have stepped into the foremost rank compared with similar power plants.

Strong Management Stressed in Drive To Conserve Energy

Tianjin TIANJIN RIBAO in Chinese 10 Nov 79 p 1

[Article: "Conservation of Energy Resources Begins with Stronger Management"]

[Text] Conservation of energy must begin with strengthening management to establish a sound system and regulations. This is an important task to be grasped well with great effort by the leaderships in each plant and enterprise during this "energy conservation month."

Our city's plants and enterprises have made some achievements in energy conservation and utilization in the initial stages but wastefulness is still very serious. Take the utilization of coal for example. Calculated in the amount of raw coal consumed for every 10,000 yuan worth of products, our city's industries consumed 5.48 tons in 1965. This rose to 6.42 tons in 1978, an increase of 17.2 percent. According to a survey of 1,143 enterprises, those which consume coal surpassing history's best level constituted 43 percent of the total. Now take power consumption, between January and September of this year, the value of industrial production increased 7.5 percent over that of the same period last year, while the use of power increased 15 percent, greatly surpassing the rate of increase in value of production. According to an analysis of unit power consumption of 119 major products between January and September, 59 products' unit power consumption registered an increase over the same period last year, using an additional 15 million kw hours of electricity. Why? The problems discovered during the initial stage by many factories include backwardness in production technology as well as poor facilities. But the main reason is managerial. Many plants do not have a fixed quota for energy consumption. Accounting is not strict, the system is not sound, responsibilities are not clear, etc. "To lead the cow one must lead it by the nose." If we grasp business administration and stop the leaks, energy conservation will be effective.

Then how can management be strengthened? In factories we start from the shop, the workflow, the shifts and each product, by establishing fixed quotas for energy consumption. To implement quotas, primary records of energy consumption must be established and a means of accounting established. Inaccurate accounting must be inspected and corrected immediately. Sound, periodic accounting and auditing systems must be established. A sound economic accounting system must also be established to analyze at regular intervals the situation of energy consumption, confirm the results, summarize the experience, and quickly solve the problems which have been discovered. At the same time, a sound workpost responsibility system must be established and the wasting of energy caused by improper management must be overcome with determination. The workers must be given training in heat engineering to elevate management of heat engineering technology, conduct periodic inspections so that those who are not up to standard technologically cannot be assigned work or participate in the operation. When each plant strengthens management, the actual situation must be taken into consideration. Where no system exists, a system must be established; where the system is not complete, it must be made so; where the system does not operate well, strict discipline must be exercised. Work must be solid and concrete, not superficial and without substance.

The work of strengthening management involves initiating and depending on the masses. Workers are practitioners of production. They understand the problems in energy management. It falls on them to look for wastefulness, investigate the causes, seek out the weak links in management, clarify the key points in reducing energy consumption within one's own enterprise and own department, and make suggestions in strengthening management and propose measures. Plant management cadres should understand management operations

and understand the situation of energy management of the same professions and abroad, join with the workers to combine theory and practice and to supplement the shortcomings with advantages. With this understanding, management work can be strengthened.

Many facts about plants indicate that whenever the leadership pays attention to management work, and in factories with a more established foundation in management energy consumption is lower. Conversely, where the leadership does not pay attention to management work, where management is chaotic, the wasting of energy is serious. Therefore, strengthening management work requires first of all that the leading cadres of the plants pay attention to the work of energy management. The belief in "taking care of output volume only and disregarding energy consumption" must be turned around.

Energy is the foundation for greater production. We must continue to criticize the extreme leftist poison of Lin Biao and the "gang of four" in management problems and exert our efforts to do well the work in energy management so that more energy can be conserved and be utilized more rationally to assure continued and accelerated development of production.

Careful Monitoring Helps Control Chemical Plant's Wasting of Power

Tianjin TIANJIN RIBAO in Chinese 10 Nov 79 p 1

[Article by Ma Muan [7456 2606 1344], Bao Naijun [0545 0035 6511], Zhang Jinhu [1728 6855 5706] and Jin Fu [6855 4395]: "Tianjin Chemical Plant Reduces Energy Consumption Through Strong Management"]

[Text] The Tianjin Chemical Plant is one of our city's big energy consumers. The use of electricity alone constitutes one-tenth of the amount of electricity used by the entire city. In recent years, the plant has taken energy conservation work as a major task and has exerted efforts to reduce energy consumption. Better economic results were obtained year after year. Taking only the period between June and October of this year as an example, the average amount of electricity used for the production of each ton of carbide was 3,200 kw hours of electricity, lower than the advanced domestic level of 3,300 kw hours. The average amount of electricity used for each ton of mercuric caustic soda was 3,200 kw hours of electricity, lower than the established national standard of 3,245 kw hours of electricity. Energy consumption was low and profits from products were high. Between January and October of this year, over 5 million kw hours of electricity, over 460 tons of coal, and over 400 tons of fuel oil were saved. The entire plant overfulfilled the profit schedule and earned over 40 million yuan in profits.

The Tianjin Chemical Plant's products supply over 20 provinces and cities throughout the nation. Annual production

of mercuric caustic soda leads the nation. In the plant, the staff members and workers are constantly being educated in the position and responsibility of the prime client and to understand that the more the state keeps to the key points the more we must conserve electricity, and use less energy to produce more quality products to support national construction, and to make use of detailed calculations to allow the staff members and workers to see the function of each kilowatt hour of electricity.

The Tianjin Chemical Plant has grasped energy conservation and exerted efforts in "management." This plant produces mercuric electrolytic caustic soda, insulated film electrolytic caustic soda and carbide, and consumes several tens of thousands of kilowatt hours per hour. Therefore, the plant asked the units producing these three products to limit their use of electricity to the established national standard and to strive toward advanced levels of consumption established domestically and abroad. In July and August of this year, the use of electricity in the production of insulated film electrolytic caustic soda increased by several dozen kilowatt hours. After they discovered this, they quickly organized the workers and technicians, discussed the situation and investigated the reason why the use of electricity rose. After repeated testing and inspections by workers and technicians, they finally found the problem that caused the increase in the use of electricity and solved it in time. In the last 2 years, consumption of electricity for the production of these three products remained lower than the established national standard for electricity consumption. This year, between January and October over 4 million kw hours were saved in the production of these three products.

In grasping the work of energy conservation, the Tianjin Chemical Plant rebuilt old equipment and improved old production technology, and implemented advanced energy conservation techniques as much as possible. In April of this year, the plant rebuilt its 27 graphite positive insulated film electrolysis troughs for the production of caustic soda and used metallic positive insulated film electrolysis troughs of advanced international standards of the 1970s. The result was a saving of 470,000 kw hours of electricity a month. Immediately following this task, the plant prepared to rebuild 54 other insulated film electrolysis troughs with the workers building all the facilities by themselves. During energy conservation month, they began to assemble and install the facilities enthusiastically. The plant's leadership, technicians and workers joined together and worked continuously for 48 hours to tear down the old equipment and install the new. The work was completed 5 days ahead of schedule. After the metallic positive electrolysis troughs went into production, the use of electricity to produce each ton of products dropped by over 200 kw hours.

This plant also paid attention to stopping the escaping of energy in the industrial production of chemicals and implemented utilization of surplus heat and comprehensive utilization. For example, a large amount of

hydrogen gas is produced in the process of producing caustic soda. In the past, a part of this gas was used in the production of other products and the rest was allowed to escape into the atmosphere, a pure waste. To conserve energy, they retrieved the hydrogen and used it as a substitute for fuel oil. This one step alone conserved 310 tons of crude oil every month.

The Tianjin Chemical Plant has done the work of conserving energy well. This is closely related to their insistence on doing the work constantly and systematically. At present, they have established the preliminaries of an energy conservation management system. The plant has a leading group in energy conservation with a deputy plant manager and an assistant chief engineer in charge. Under it is an office in charge of daily work. Each shop has an energy conservation group and work sections and shifts have full-time and part-time staff members to perform such work. The entire plant has become an energy conservation network of mass character. Recently, the plant organized special personnel to inspect and test 25 transformers, 63 generators and the entire plant's low voltage wiring to reduce nonproductive consumption and stop the wasting of energy. At the same time, an inspection and analysis system to inspect and analyze the weak links in energy conservation work was set up. Units and individuals who were found to perform energy conservation work well were called upon to summarize their experiences and popularize their work and were given energy conservation rewards. Those who violated regulations and were wasteful were sanctioned economically.

Field Tests on Automatic Boilers Show Promise for Energy Savings

Tianjin TIANJIN RIBAO in Chinese 11 Nov 79 p 1

[Article by Yang Jinlong [2799 6855 7893] and Lan Enqi [5663 1869 6386]: "More Than 30 Boilers in City Now Controlled Automatically"]

[Text] The city's scientific coordination, instrumentation and automation technology research committee, the city's automated instrumentation company and the city's instruments supply station have exerted great efforts in the popularization of automatic control of boiler meters under the support of user units and concerned departments. At present, over 30 boilers throughout the city have automatically controlled meters. This has provided good results in energy conservation.

Some industrial boilers used by the enterprises of our city are manually operated. Some boilers consume a lot of energy because of poor maintenance. Some are unsafe and production is unstable. To promote rebuilding of the boilers, and to realize automatic control of boiler instruments, the city's scientific coordination, instrumentation and automation technology research committee, the city's automated instrumentation company and the city's instruments supply station carried out field tests at the

Hebei Pharmaceutical Plant, Tianjin Experimentation Plant and Tianjin Ink Plant. After over a year's practice, good results have been obtained. Safe operation of boilers has been assured and their life prolonged. This is advantageous to good economic accounting, reduction of energy consumption, reduction of the labor intensity of workers, improvement of the labor environment and raising of labor productivity.

To further do well the work of automatic controls for boilers throughout the city, on 6 November the city's scientific coordination, instrumentation and automation technology research committee, the city's industrial exhibition hall, the Second Machinery Bureau, and the automated instrumentation company jointly held a meeting to report on the automatic control of boiler instruments. At the meeting, the city's automated instrumentation company said it is able to provide whole sets of instrumentation equipment and concerned technological information for automated control of boilers.

Beijing Opens Energy Conservation Exhibition; New Technology Featured

Beijing BEIJING RIBAO in Chinese 12 Nov 79 p 1

[Article by Zhao Shunfu [6392 7311 4395]: "Energy Conservation Exhibition Opens in Beijing"]

[Text] In coordination with the nationwide energy conservation month campaign and the exchange of advanced experiences on conservation of energy resources, the Beijing Municipal Energy Conservation Exhibition opened on 10 November at the Beijing Technical Exchange Center.

The exhibition rather systematically introduced the situation on energy resources and their use in this city, the situation in the conservation of coal, petroleum, electricity, and gas, and the situation in the development and use of new energy resources. During the past several years great achievements have been made citywide in energy conservation work. Every enterprise and unit has gone all out in the use of waste heat and 2.3 million megacalories of waste heat has been put to use for an annual saving of 400,000 tons of coal. Throughout the city, 3,000 boilers and furnaces have been improved permitting an annual saving in coal of 100,000 tons. By using low quality fuels, by burning 200,000 tons of gangue annually and by reburning 300,000 tons of furnace cinders, more than 70,000 tons of coal can be saved. Each unit also strengthened management throughout, gave serious attention to cost accounting, and plugged holes where waste occurred. At the present time there are 1,846 units throughout the city which have instituted supply of electricity by certificate, and more than 80 percent of manufactures have reduced norms for consumption of electricity per unit of product, with 87 million kw hours of electricity being saved. Electric meters have been installed in 90,000 residential households for a saving in electricity of 10 million kw hours

of electricity. While summarizing accomplishments, the exhibition also displayed concretely the citywide energy conservation quota for this year, showing that part of it fulfilled between January and September. It also portrayed new requirements for conservation of energy resources for next year, explaining that there is still a lot of room for conservation of these resources.

Using objects and charts and graphs inside the exhibition hall, a vivid introduction was given the advanced experiences of some advanced units. The 300 small heating furnaces in the medium- and small-size steel rolling mills of Capital Steel used to consume 25,000 tons of heavy petroleum annually, but after management of energy resources was launched, internal mill leadership strengthened, heat work technicians provided, the heat work system revamped, measurements perfected, and a petroleum conservation competition launched, the oil consumption declined in 1978 by 28 percent, with more than 7,700 tons of oil being conserved. Between January and September of this year, oil consumption again declined 6.3 percent with the conservation of more than 1,000 tons of oil. The Beijing Flanellette Blanket Plant aroused the masses to strict enforcement of rules and regulations to bring about a decline in fuel consumption thus achieving increased production while practicing conservation. In 1978, total output value increased 12 percent while coal consumption declined 6 percent averaging a coal consumption per 100 meters of fabric ratio that is lower by 65 kilograms than the best on record. Between January and September of this year, coal consumption again declined 7 percent over the same period last year. The Beijing No 5 Glass Plant initiated fuel management and technical improvements in its glass smelters. By improving the structure of the furnaces, insulating all furnaces, putting into use a high pressure internal turbulence multi-cavity flat flame-spraying gun, and making the furnaces self-regulating, oil consumption declined year after year with a decrease between January and September of this year of 24.3 percent over the same period last year for a saving in heavy oil of more than 2,190 tons. The Beijing Automobile Manufacturing Plant brought planned use of electricity into the channel of managing enterprises according to economic laws with an increase in output value for January to September of this year amounting to 24.5 percent more than for the same period last year. Electricity consumption increased by only 11.4 percent for a decline in electricity consumption of 11.8 percent for 10,000 yuan worth of output value, thereby instituting both the practice of conservation and growth in production.

In recent years, many new techniques have been promoted and adopted for the conservation of coal, petroleum, and electricity. For example, the use of waste heat to generate electricity, a change in the method of burning coal from laminar burning to clear burning, and the centralization of the heating system to improve heating efficiency; in the conservation of petroleum, use of improved carburetors on automobiles, the promotion of cavity lubrication and lithium base greases; and in the conservation of electricity the adoption of the new technology of far infrared heating. These were shown as models with concrete technical explanations at the exhibition for the convenience of each unit's observation and study.

Fushun Petroleum Plant Kicks Off Energy Conservation Campaign

Beijing GONGREN RIBAO in Chinese 13 Nov 79 p 2

[Article by Cui Mingli [1508 2494 4409]: "Fushun Petroleum Plant No 3 Launches 'Five One's' Energy Conservation Movement. During the Past 9 Months Petroleum Savings of 7,000 Tons and Electricity Savings of 3.8 Million KW Hours"]

[Text] The masses of employees at Fushun Petroleum Plant No 3, as part of a campaign to increase production and practice conservation, have launched a "five-one's" campaign to save 1 kilogram of oil, 1 kilowatt hour of electricity, 1 kilogram of water, 1 kilogram of steam, and 1 yuan of money, to conserve energy and reduce consumption that has achieved outstanding success. While fully completing economic quotas month after month, they saved 7,000 tons of fuel oil and 3.8 million kw hours of electricity between January and September.

While launching the "five-one's" campaign, warehouse workers in the transportation and sales section themselves took action to make two sets of secondary water removal devices to solve the problem of water removal in carrying oil. By the end of September, they had recovered 1,900 tons of petroleum. Workers in the distillation and the atmospheric vacuum shops made improvements in processing technology and in the gas pipe network, recovering all petroleum tail gases, using them to replace fuel oil in firing heating furnaces thereby eliminating discharge of the gases into the air for an annual saving in fuel gas of more than 9,000 tons. Staff and workers of the motorcar company launched cost accounting for fuel consumption by individual vehicles, saving 13 tons of petroleum between January and September.

Through the campaign of "five-one's," further impetus was given to management work. By reducing equipment and using rational control methods in gas production and hydrogeneration systems, which account for 85 percent of the electricity used, a saving of 3.83 million kilowatt hours of electricity was possible between January and September. By cutting back on rice steaming and bathing, conducting unified management and setting up fixed hours when open, a monthly saving of 660 tons of steam was effected. They also adopted many measures to improve the efficiency of heating furnaces. Inspection was made of consumption for each of the 13 heating furnaces and 7 steam boilers throughout the plant with a reorganization of concerned sections and offices to revise and strengthen regulations pertaining to the heating efficiency of each heating furnace and fuel gas line, and appointing a person to be solely responsible for performing checks once each month of the heating efficiency of the 13 heating furnaces and once every 2 months of the gas lines. Now the average heating efficiency of each of the 13 heating furnaces has climbed from 65.3 percent to 71.7 percent for a monthly saving in fuel oil of 347 tons.

Impressive Coal Conservation Claimed by Tianjin Printing Plant

Beijing GONGREN RIBAO in Chinese 13 Nov 79 p 2

[Article by Huang Zuoren [7806 0155 0088] and Dai Renjie [2071 0088 2638]: "Tianjin Printing Plant Launches Energy Conservation Competition, Saves More Than 7,200 Tons of Coal During Past Half Year"]

[Text] By way of uncovering latent energy sources, the Tianjin Printing Plant launched a mass movement that has been going on since May of this year consisting of a competition in subnorms for conservation of coal which has seen outstanding achievements. During the past half year this plant has managed, despite steady growth in production with commensurate consumption of steam and electricity, to conserve more than 7,200 tons of coal in firing its boilers as compared with the same period last year, realizing a saving in energy while increasing production.

The Tianjin Printing Plant is a medium-size enterprise that produces printed cloth using pure cotton and synthetic fabrics. The plant has 4 boilers and a small turbo-generator, which require annually almost 70,000 tons of coal, more than 11 million kw hours of electricity, and more than 3 million tons of water. During the past decade and more their energy management work has consisted of using coal with no accounting for it and making steam whether it was needed or not, in a system of eating from "a large pot." During spring of this year, when faced with a situation of accelerated growth of the textile industry, this plant conscientiously aroused its masses to correct and enhance management of the enterprise.

In order to do a good job of energy conservation, they solidly performed three basic tasks. The first was to make teams and groups responsible for the statistical and measuring and metering work. They inspected and repaired scales, both large and small, and various instruments. They had their coal weighed, a carload at a time, with teams and groups keeping statistics and writing things down conscientiously. Amounts of steam and electricity produced were also recorded accurately. Second, they formulated rather equitable subnorms for energy conservation. They measured the steam generating capacity of different kinds of coal, the amount of burnable residue in coal ashes, and the amount of backwater, setting some quite equitable quotas to serve as standards for assessing the competition. Third, they set up a system for figuring competition awards in a system of meting out rewards and punishments.

With this as a foundation, the plant launched a widespread competition on subnorms for coal conservation. Each month an assessment was made of individual teams and prizes were awarded. Once the energy conservation campaign was launched, staff and workers in the departments that provided steam and electricity experienced a stronger sense of responsibility and

a sense of honor about energy conservation. Every team, from the head of the boiler team, to the stokers, to the workers who hauled out the ashes--a total of 39 people--closely joined together in a common effort to reduce coal consumption, and to increase steam production and the amount of electricity generated, figuring out ways to do this, keeping careful calculations and strict budgeting. In the past, the fire grates frequently burned out, but there has been no recurrence of this during the past half year. Because coal is being completely burned, combustible coal in the ashes has declined from a former average of 33 percent to about 16 percent. Work in coal conservation has shown results. Continuing, they conducted assessments of teams who were then awarded cash awards according to how much coal they had saved after completing their quotas, with distribution of awards being made proportionally according to the amount of responsibilities and the extent of contribution with no egalitarianism. This effectively aroused the workers' enthusiasm for energy conservation.

The Tianjin Printing Plant similarly launched a mass assessment of competition in conservation of energy among the eight workshops and departments on use of steam and electricity. During August and September it conducted two plant-wide competitions in energy conservation, distributing certificates of merit and cash awards to units who had been progressive in energy conservation, thereby greatly promoting energy conservation work throughout the plant.

Thanks to the launching of the mass competition to conserve energy during the past half year, the plant effected an actual reduction in coal consumption of to 7,200 tons between May and September of this year over the same period last year. Electricity generated during September increased 39.9 percent over the same month last year, and the plant has shown a surplus of electricity over its own needs, changing from being a purchaser of electricity to providing electricity to the grid. It has also used more than 13,100 tons of recycled water equivalent to the conservancy of 1,967 tons of coal.

Hangzhou Boiler Plant Turns Out More Efficient Equipment

Beijing GONGREN RIBAO in Chinese 13 Nov 79 p 2

[Article by Ma Zhengchuan [7456 2973 3123]: "Labor Model Chen Yousheng [7115 2589 3932] Makes New Contribution to Energy Conservation, Valiantly Shoulders Heavy Load in Making Waste Heat Boilers"]

[Text] In March of last year, when nationwide labor model and deputy plant manager of the Hangzhou Boiler Plant, Chen Yousheng, heard that a concerned department was planning to import from abroad a shipment of waste heat boilers at a cost of more than 200,000 United States dollars apiece in foreign exchange, he became upset. He thought, "Our Hangzhou Boiler Plant makes boilers; can't we make them ourselves?" With the support of the plant's party committee, he twice went to the capital to ask a combat

assignment from the department concerned. At this time, a Lanzhou chemical industry company also sent a person to seek his plant's assistance, asking that they design and manufacture a 110,000-ton waste steam heat boiler for cracking light oil. The Nanjing Chemical Industrial Company also required production of a 120,000-ton sulfuric acid, waste heat boiler....

An intense sense of responsibility made Old Chen determined to shoulder responsibility for designing and manufacturing excess heat boilers. Once test manufacturing began, he persisted in giving on-the-spot direction, fighting bravely night and day together with the workers and the technicians. When, during the process of assembly, a pipe was discovered to have dripped a bead of water, Old Chen unhesitatingly called in the electric welders to work late into the night to redo the work. Thanks to the joint efforts of comrades throughout the plant, the first 110,000-ton excess steam heat boiler for cracking light oil was successfully test manufactured. It was found to be fine in performance and quality.

Next, Chen Yousheng led the employees of the entire plant in the manufacture for the Nanjing Chemical Company of two 120,000-ton sulfuric acid excess heat boilers, and the manufacture of 5 waste heat boilers for the Shanggang No 3 Plant and the Hangzhou Glass Plant. All these were made outside the state plan with the precondition that the state plan also be entirely completed. Not only did this save the state a lot of foreign exchange, but once these boilers were put into production the waste heat could be used to generate electricity, thereby making a contribution to the conservation of energy and the development of production.

Prospects 'Excellent' for Converting Coal to Clean Energy Resource

Beijing BEIJING RIBAO in Chinese 14 Nov 79 p 3

[Article by Jiang Ye [3518 2814]: "Making Coal a Clean Energy Resource"]

[Text] Today every nation of the world depends to a very great extent on oil as a source of energy, but known oil reserves are limited. For the long run, coal will be the dependable mineral energy source second to none. Available data indicate that proven coal reserves throughout the world stand at about 98 billion tons of standard fuel (1 ton of standard fuel being the amount of fuel required to produce 7 million kilocalories of heat). Even if only a small portion of this is recovered, there is enough to meet many hundred times current annual consumption. Our country, in particular, is richly endowed by nature with extremely abundant reserves, so we ought to pay great attention to the development and use of this energy resource.

Nevertheless, coal has many failings as an energy source. Apart from the problems associated with its mining, transportation and use, its heat utilization rate is not sufficiently high and the pollution produced by the burning of coal is extremely severe as well. For every ton of coal

that is burned, between 100 and 200 kilograms of ashes have to be gotten rid of, and more than 10 kilograms of soot and scores of kilograms of sulfur dioxide is vented into the atmosphere.

Just how can these shortcomings be overcome?

More Effective Conversion of Coal Into Electrical Energy

Electric power plants are big consumers of coal. A medium capacity 500,000-kilowatt power plant will annually consume more than 2 million tons of coal. To transport unwashed raw coal from coal producing regions to coal deficient regions for the generation of electric power is not as economically profitable or as convenient as transmitting electric power from coal producing regions, which can change the outward shipment of coal from the mining regions and reverse the flow of energy back to its point of origin as electricity. In recent years, one foreign country after another has built large-scale thermal power plants in the vicinity of coal mines. In our country too there is some construction of power stations at the pit head in coal bases to convert low quality coal of high ash content that is not readily transportable for great distances into powerful electric current for transmission to fairly distant regions. The coal ashes can also be made into chemicals or construction materials.

In recent years the burning of coal to generate electricity has made a series of technical advances of which the one that most attracts attention is fluidized-bed roasting. In this new burning method, a rather strong air current is blown into the furnace chamber causing the coal to burn in a suspended state to produce a rather high rate of heat liberation and a high rate of transfer of heat volume. Even if ash content of the coal is high and the coal is of low heat value, full combustion can be attained even at comparatively low temperatures. When coal with a high sulfur content is burned, the addition of limestone or dolomite to the furnace prevents the liberation of sulfur, thereby reducing environmental pollution.

In order to increase the heat efficiency for thermal generation of electricity, in addition to using high capacity, high parameter generating units, vigorous research and development is taking place on the use of a new power generating technology that employs gas turbines, steam turbines, and magnetic fluid-steam turbines cycling together.

Gasification of Coal

There are many advantages to be had from converting coal into coal gas. The gas is easy to use, the heat utilization rate is high, and it burns relatively cleanly with a notable reduction in dust pollution. The problem of liberation of sulfur from coal gas is also fairly easily solved.

Traditional methods for using coal to make gas such as air-producer gas, water gas, coke oven gas and other dry distillation oven gases all have

some shortcomings. Abroad, attention is presently being given to the development of increased pressure gasification methods, and several techniques have already resulted from the research. The famous Lurgi gasification process uses oxygen and steam as a vaporizer causing the coal to begin gasification at between 20 and 30 atmospheres of pressure from which is derived coal gas of high heat value that can be conveniently transported over vast distances. Some countries are experimenting with underground gasification by injecting air or oxygen into underground coal seams to cause the coal to gasify subterraneously, after which the gas that has been produced is led through conduits to the surface for supply to consumers. This not only solves the difficulties of mining in deep seams or thin seams, but it also reduces problems in transportation and in destruction of the environment. Cheap coal gas may be used in thermal generation of electricity. Hookups of gasified gas turbines and steam turbines to generate electricity is a new technology.

Coal Liquefaction May Stage a Comeback

Liquefaction of coal is yet another method for making coal into a clean fuel. The liquefaction process consists principally of mixing coal with a special solvent to form a coal oil slurry and then a definite pressure and temperature to introduce hydrogen from outside to break down the coal to form a petroleum-like liquid after which gasoline and other fuels are extracted from it. There is also another line of technology whereby the coal is first gasified to form carbon monoxide and hydrogen after which methanol is used to produce a synthetic gasoline. Methanol itself possesses properties similar to gasoline, but the exhaust gases resulting from its combustion produce less serious impact on environmental pollution and it is thus a prospective substitute for gasoline in motor cars. Use of solid coal for conversion to liquefied fuel produces less than the chemical changes of gasification, but the energy conversion rate is higher. Nevertheless, at the present time there is less development of coal liquefaction processes than of gasification because several crucial technological problems still require solution.

In summary, over the long range, the conversion of coal into a clean source of energy poses no technological difficulties that cannot be solved, and prospects are excellent.

Copper Plant Streamlines Operation, Saves Oil, Power

Tianjin TIANJIN RIBAO in Chinese 17 Nov 79 p 1

[Article by Liu Qipei [0491 0366 0012]: "Four Hundred Tons of Oil, 250,000 Kilowatt Hours Saved in 3 Months"]

[Text] Tianjin city's electrolytic copper plant actively implemented the staff's reasonable suggestion in the movement to increase production and conserve energy. It picked out waste copper wires and copper threads from

the copper raw material to directly produce copper wire ingots and shortened the production procedure and reduced waste. Since March, by the use of this rational suggestion in the utilization of waste copper material, 250,000 kw hours of electricity and 400 tons of fuel oil have already been saved and wasting of copper material was reduced by 9,870 kilograms, a total conservation of over 250,000 yuan in expenses.

In the past, this plant always used finished electrolytic copper products to produce copper wire ingots. Red copper material and special red copper material sent to the plant were first run through the positive furnace and copper electrolysis procedure to become electrolytic copper. The copper was then placed in the wire ingot furnace to make copper wire ingots. In the movement to increase production and conserve, the management cadres of the scientific laboratory suggested that special red copper material be picked from the waste material of copper thread and copper wire for direct production of copper wire ingots without melting and electrolysis. The suggestion caught the attention of the plant's leadership. Immediately afterwards, the plant leadership held a meeting of concerned departments to study the suggestion and to distribute the work. Technicians were assigned to study the suggestion and to distribute the work. Technicians were assigned to take care of the quality problem and to tightly grasp the work of conducting experiments. The staff members and workers conscientiously picked the material, conducted melting operations strictly and conducted laboratory testing and analysis in time. The experiments were successful and the quality of the copper wire ingots produced was up to standard. This not only eliminated two operational procedures but also conserved the use of fuel oil and reduced consumption of electricity and copper material.

To solve the massive workload involved in the selection and the tight personnel problem, this plant mobilized the staff members and workers to utilize free time to select copper material and for each ton of copper material picked, a reward of 3 yuan was given. This took away only one hundredth of the total value of the expenses conserved per ton and was a way to encourage labor activeness of the staff and workers.

Textile Mill Eliminates Unnecessary Electrical Equipment

Tianjin TIANJIN RIBAO in Chinese 17 Nov 79 p 1

[Article by Liu Yonggang [0491 3057 0474]: "Knitted Sportswear Mill Conserves 80,000 Kilowatt Hours Since Beginning of Year"]

[Text] Since the beginning of this year, the knitted sportswear mill has conserved over 84,600 kw-watt hours, constituting 15.1 percent of the total amount of electricity used by the mill.

The mill took three measures in grasping conservation of electricity this year:

- 1) The situation of using a big horse to pull a small cart was changed. The mill has over 400 electric rotary generators and over 1,000 lights. Some comrades held the belief that "as long as the lamps light up and the motors run regardless of whether they waste electricity or not" and the wasting of electricity was serious. Addressing this situation, the mill established an electricity conservation group composed of the leadership, workers and technicians and the use of electric generators throughout the mill was surveyed. Twelve 3-kilowatt electric generators were replaced by 1.3-kilowatt electric generators;
- 2) Regional management was implemented. Each shop of this mill installed auxiliary meters to measure electric currents. Each month, the mill office issued guidelines for use of electricity to each shop. The shops that conserve the use of electricity were given rewards on a percentage basis. Those shops that exceeded the quotas stated in the guidelines were punished by deducting points from the reward; and
- 3) Consumption of empty runs was stopped. The mill reinstalled controls and switches and changed the original controls and switches that controlled many machines and many lamps to one control for each machine and one switch for each lamp. At the same time, the electricity conservation group joined with the staff members and workers of the shops to consider the problem of rational distribution of lighting and eliminated some unnecessary work lamps.

Tianjin Paper Mill Organizes Energy Management System

Beijing GONGREN RIBAO in Chinese 17 Nov 79 p 2

[Article by Dai Renjie [2071 0098 2638]: "Do a Solid Job of Energy Management Work; An Examination of the Energy Saving Work of the No 5 People's Paper Manufacturing Plant in Tianjin"]

[Text] The Tianjin No 5 People's Paper Manufacturing Plant is an integrated production enterprise for the manufacture of pulp and paper with an annual production of cotton pulp and paper amounting to 16,500 tons each. The plant has 6 shops, more than 1,900 employees, and more than 480 electrically operated machines with a total capacity of more than 12,200 kilowatts of electricity and with an annual consumption of electricity totaling 33 million kilowatt hours. Since June of this year, this plant has done a large amount of solid work in energy management to produce good achievements in the energy conservation and increased production. The third quarter saw an increase in pulp and in paper production amounting to 28 percent and 17 percent respectively over the same period last year, while electricity consumption for the production of pulp and paper declined 8.9 percent for a total saving of 690,000 kilowatt hours of electricity.

The principal work done by this plant in energy management is as follows:

Building Energy Management System From Top to Bottom

This plant truly placed energy conservation on its daily agenda, effectively strengthened leadership, and set up a system for energy management from top to bottom. Within the plant was established an energy leadership group headed by the deputy plant director and staffed with a middle level cadre familiar with the work of the plant as well as electrical technicians and experienced cadres transferred from elsewhere to form a five-man crack office staff for conservation of energy in the plant to emphasize energy management and conservation work. Each shop reciprocally set up an energy conservation organization and designated a person to be responsible for energy conservation. Each shift also had a person to act as a supervisor in energy conservation in addition to his other duties. The entire plant, from top to bottom, had an energy management network consisting of counterparts and people specially assigned to the task who could transmit downward matters from the top and inform the top of events below so as to take matters in hand in a timely and accurate way and solve problems concretely and vigorously, thereby effectively developing energy conservation work throughout the whole plant.

Energy Management System Steadily Perfected

Installing measuring instruments to do a good job in measuring and statistical work. In the past, this plant had only the main meter in its transformer room. There were no submeters in the individual shops, so electricity was used from a "common pot" with a general billing taking place at the end of each month. No one knew just how much electricity was consumed to make a given product. They realized that "consumption without quota" and "no method for metering" were interrelated, and for the "common pot" to be changed to an "individual mess," they would have to come to grips with metering. To solve the difficulty of an insufficient supply of meters, they launched a mass campaign to recondition more than 20 electric meters and they installed more than 60 submeters on key equipment in six shops to do metering and create the necessary material conditions for statistical work.

Following examination and study plus repeated discussions, equitable consumption quotas were formulated. Once the electric meters had been installed, they went through a process of examination and study to chart the electricity consumption situation, stirred up mass discussion, discussed matters over and over again from top to bottom, and formulated electricity consumption quotas for 13 of the plant's products, with each shop making further breakdowns of the quotas into norms for each item with this information being transmitted to shifts and teams in the plant and for individual machines. Reaction of the workers was that if the norms were "loose they could not be attained, but if tight they could be met or exceeded," and that they were realistic and quite equitable. Since June of this year, the entire plant has gradually put into practice statistical use of electricity in each shop with routine checks against norms.

Gradual perfection of each management system. In order to keep on top of the situation in electricity consumption and avoid an end-of-the-month "overall settling of accounts," they set up a system of daily meter readings, figuring by shifts, and daily posting of accounts with a weekly issuance of a report so that every shop, shift, and team would be as familiar with electricity use as they were with their own hands and could spot problems in time and take corrective action. They also summarized experiences, and prescribed implementation of the "six sets" at principal production points such as the semipulp machines, the finished pulp machines, the cylinders, and the disc grinders. The "six sets were (set personnel, set machines, set quality, set quantity, set electricity consumption, and set rewards). In these efforts they were quite successful. Where the pulp making shop used to use an average of 400-500 kw or as much as 700 kw hours of electricity to make a batch of pulp, with the implementation of the "six sets," this declined to about 300 kw hours, and as little as 220 kw hours. During the first month of implementation of the "six sets," conservation of electricity in this workshop amounted to 220,000 kw hours.

Additionally, by way of assuring implementation of measures to conserve electricity, this plant also gradually instituted a "management system for starting and stopping machines," a "system on use of electricity during peak hours," a "system for management of street lighting," with a system for "weekly inspections, analysis once every 10 days, and assessment once each month" to give impetus to the steady intensive development of energy conservation work.

Strict Implementation of a Method for Meting Our Rewards and Punishments in Energy Management

As a means of encouraging employees throughout the plant to use energy sensibly, to cut down consumption by every possible means, and to increase output while conserving energy, this plant prescribed a "method of giving rewards for conservation of electricity and conservation of coal" in July of this year. This method provided for a "calculation of reward money on the basis of the energy conservation norms approved by the superiors and transmitted downward" with the amount of reward money being a set proportion of the value of the saving through conservation of electricity or coal. Reward money was distributed on the basis of the degree of responsibility of operators in different positions, and the extent of their contribution. Energy conservation prize money was "disbursed according to the value of the saving and carried on the books as a cost." This method also stipulated that if the electricity consumption norms were not met, the amount of the fine for exceeding the norms would be deducted from rewards for production and if in any given month funds were insufficient, deductions would be continued to be made from rewards for production in successive months. Any dereliction of duty or violation of work rules causing waste of energy on the part of any cadre or worker would

meet with "additional fines," or "necessary administrative disposition" according to the seriousness of the offense. As a result of this method of meting out rewards and punishments, a positive concern for careful budgeting and strict calculation and conservation of energy was aroused throughout the plant. Many workers hung up small signs at their work positions showing the electrical capacity and the per minute consumption of electricity of their equipment by way of supervising and urging themselves to make every minute and every second count in the conservation of electricity. In the past, the cylinder maintenance workers felt that "conserving electricity or not conserving electricity has nothing to do with us," but now they diligently check and maintain the machine so that the cylinder uses less electricity and does more work. This plant has twenty-five 20-kilowatt machines that feed pulp into a well. All of these used to run at the same time, but now after everybody has started strict budgeting and careful calculations and suggesting ways and means for doing things, it has been decided to have only 10 of the machines operate continuously, have 12 machines take turns operating, and to shut down 3 machines for a long period. With this improvement, a saving of 15,000 kilowatt hours of electricity per month has been effected.

This method of rewards and punishments encourages the progressive and spurs on the laggards. During early July of this year, one shop in this plant exceeded the norm through carelessness and used 30,000 kilowatt hours more electricity than it was entitled to. The plant's energy conservation office immediately warned them and also supervised, encouraged, and helped this shop take steps to stop operating empty vehicles, reduce its rate of returns to the vat, and increase its paper productivity rate with the result that by the end of the month it had not only made up for its deficit on the norm but had also saved more than 1,300 kilowatt hours of electricity.

Importance of Energy Conservation Explained to Readers

Beijing CONGRREN RIBAO in Chinese 17 Nov 79 p 2

[Article by Wang Hai [3769 3189] and Hu Xiulian [5170 4423 8834]: "What Is Energy?"]

[Text] In his daily life and production activities, mankind requires all sorts of energy such as heat energy, mechanical energy, electrical energy, and chemical energy. The resources required to produce these kinds of energy are called energy sources.

Energy sources may be divided into two broad categories: one category includes the ready-made natural energy resources such as coal, crude oil, natural gas, water power, and wind power, which are called "primary energy sources" i.e., natural energy sources. Another category includes energy sources that have been directly or indirectly transformed from primary energy sources, such as electricity, steam, diesel oil, coke and coal gas, which are called "secondary energy sources," i.e., man-made energy sources.

Energy sources may also be classified according to their use as "customary energy sources" and "new energy sources." The so-called "customary energy sources" are the energy sources that people use daily in large quantities, such as coal, petroleum, and natural gas; energy sources complementary to "customary energy sources," such as atomic energy, solar energy, geothermal energy, and biological energy (methane), are commonly called "new energy sources."

As a means of conserving energy and stopping waste, the State Council has approved designating every November as "Energy Conservation Month" beginning with this year. During "Energy Conservation Month," within a concentrated period of time, wide-ranging propaganda is to be given the importance of saving energy and experiences in saving energy are to be summarized with commendations and awards being issued to advanced units and individuals for saving energy, and with the formulation and implementation of each year's programs for saving energy.

Numerous countries have similar "Energy Conservation Month" campaigns. Japan, for example, has an annual "Energy Conservation Month" each February. During this month, appropriate government departments organize assemblies to make speeches, conduct all sorts of exhibits, and award commendations and awards to advanced units and individuals for energy conservation. They also use the newspapers, magazines, and television to give widespread coverage to the importance of conserving energy. Some key enterprises also carry out large propaganda and inspection campaigns for the conservation of energy, giving awards and commendations to the deserving, and also putting forward energy saving programs and concrete measures to be taken to conserve energy, which are given circulation in the press.

System of Rewards and Penalties Initiated for Gasoline Consumption

Tianjin TIANJIN RIBAO in Chinese 20 Nov 79 p 1

[Article by Lan Guoming [5663 0948 2494]: "Rewards for Saving Gasoline, Punishments for Its Extravagant Consumption"]

[Text] The city's long-distance motor vehicle company's three fleets of vehicles have implemented individual rewards for conservation of gasoline and have strongly promoted the work of conservation of gasoline throughout the entire fleet.

In the past, this fleet offered a general cash reward, and fuel consumption was only one item in the rewards. Anyone who used less than 24 liters of gasoline for every 100 kilometers traveled was regarded as having accomplished the task of meeting the standard for fuel consumption. In this way, conserving more or conserving less made little difference in being rewarded. This affected the activeness of the drivers to conserve fuel. The company's 36 trucks and over 40 drivers saved only over 400 liters of gasoline between January and May. Facing this situation, this

fleet decided to give individual rewards for conserving gasoline beginning in June. They ruled that saving one liter per hundred kilometers traveled, or using only 23 liters of gasoline for every 100 kilometers traveled is rewarded in the amount of 3 fen. For every liter of gasoline over 24 liters used per 100 kilometers traveled a fine of 3 fen is imposed. The past situation of disregard for using more or using less gasoline was changed, and the drivers' activeness was mobilized. Between June and October of this year, this vehicle fleet saved a total of over 18,690 liters of gasoline.

The fleet implemented economic management but did not abandon ideological work. The leadership of the fleet helped those drivers who wasted gasoline raise their ideological awareness to save gasoline on the one hand and joined with them to investigate the cause of the waste on the other. The spirit of the vehicle fleet is now characterized by pride in conservation of gasoline and shame in its wastage.

Steel Mill Gives Individual Rewards for Fuel Conservation

Tianjin TIANJIN RIBAO in Chinese 20 Nov 79 p 1

[Article by Wang Jun [3769 6511]: "Establishing System of Rewards for Oil Conservation Yields Good Results"]

[Text] The city's No 1 Steel Rolling Plant has implemented a system of rewards for oil conservation to reduce consumption of fuel oil and promoted the progress in energy conservation work. During the first 10 months of this year, over 2,000 tons more fuel oil were conserved than that during the same period last year.

Implementing the reward system for oil conservation has mobilized the activeness of the staff members and workers, and hastened the progress toward the utilization of new techniques of energy conservation. The year before last, the plant's technicians applied new techniques on two fuel oil heating furnaces and achieved results in conserving the use of fuel oil. After implementation of the system of rewards, they further applied oil conservation techniques to the fuel oil heating furnaces and through practice, obtained very good results and were praised by the plant management and given material rewards.

To conserve the use of oil, staff members and workers began to think. In the cold assembly belt shop, pipe workers, boiler workers and fitters conscientiously studied techniques and engaged themselves in the utilization of surplus heat from the annealing furnace, and built a surplus heat steam boiler, assuring the source of steam for production as well as conserving fuel oil. Between May and October, they conserved a total of over 1,200 tons of fuel oil. The plant greatly praised their spirit of being the masters in their work and gave a reward of 200 yuan.

To reduce consumption of fuel oil in the rolling of steel, the plant also implemented a system of individual rewards for fuel oil conservation. Between July and October, average unit consumption of fuel oil in the hot assembly belt shop dropped from June's 57 kilograms to 48.6 kilograms, and in the cogging shop, average unit consumption dropped from 73 kilograms to 65.5 kilograms.

Implementation of individual rewards for oil conservation at this plant took the production shift of the shops as the unit for examination and reward. The single reward for oil conservation is given to the shift which overfulfills the state guidelines for fuel oil conservation for that month and satisfies the schedules for production, quality and variety.

In implementing rewards for oil conservation, the plant insisted on distribution according to the extent of the contribution toward oil conservation, opposing equalitarianism. At the same time, those units or individuals who waste fuel oil were investigated and held responsible. Practice proves that the implementation of the system of rewards for oil conservation is a good method to promote energy conservation work. At present, the plant is gradually perfecting the rewards system so that the activeness of the staff and workers in energy conservation is well mobilized and the work of energy conservation can be carried out in depth.

Advantages of Rewards and Punishments Examined

Tianjin TIANJIN RIBAO in Chinese 20 Nov 79 p 1

[Commentary: "There Must Be Rewards and Punishments for Energy Consumption"]

[Text] Recently, many factories, enterprises and businesses changed their method of "eating from the big bowl" in energy consumption. Guidelines for using coal, oil, electricity and gas have been implemented in the departments, shops and shifts and the reward system for conservation has been carried out. This method is very beneficial to the promotion of conservation of energy and is worth popularizing.

Energy resources are the important material basis for developing industrial and agricultural production. Raising the rate of utilization of energy resources and using the least amount of coal, oil, electricity and gas to produce more agricultural and industrial products is a policy that should be persistently carried out over a long period of time. Some units have loosened up on management of energy resources, consumption is not according to fixed quotas, the use of energy is not accounted for, and the long period of "eating from the big bowl" has caused a great waste of energy. This kind of phenomenon cannot continue.

Based on consuming energy according to quotas, the method of rewarding conservation efforts has many benefits. It can stimulate leading comrades at all levels to heighten their self-consciousness in grasping energy

conservation and promote continuous improvement in energy management work. It can fully develop the function of technical personnel to actively use the various new techniques of energy conservation and can encourage the activeness of staff members and workers in energy conservation so that everyone holds down the fort and energy is conserved everywhere. Therefore, all plants, enterprises and businesses must draw up, implement on a trial basis and popularize the method of rewarding conservation in energy consumption during the "energy conservation month." This will benefit the nation, the enterprises and every staff member and worker.

Of course, in implementing rewards for conservation of energy, certain punishments should also be given to those who waste energy, for instance, withholding a portion of the monetary rewards when consumption surpasses the fixed quotas in the guidelines, and the responsibility for serious waste of energy should be investigated. Such punishments are necessary. In this way, those departments or individuals who do not pay attention to energy conservation can be taught a lesson and active measures can be taken to stop the wastage, and change wastefulness into conservation. When the method of rewards and punishments is implemented, energy conservation will achieve great results.

Symposium Bares Low Utilization Rate of Heat Energy

Beijing GONGREN RIBAO in Chinese 20 Nov 79 p 2

[Article: "Potential Great for Savings in Energy, an Issue that Concerns the Overall Situation for Which Everyone is Responsible. This Newspaper Invites a Group of Experts and Cadres to a Discussion Forum on Energy Problems"]

[Text] Recently this newspaper invited a group of experts who have studied the energy problem, some energy administration departments, and comrades associated with industries and mines to conduct a symposium on the problem of saving energy resources. Everyone put forward some very good views on the meaning of saving energy resources, the potential, methods, and problems of government policy.

Energy Conservation Is a Strategic Measure in the Realization of the Four Modernizations

Comrades attending the symposium felt that the energy problem is a strategic problem that concerns the overall situation of the Four Modernizations and for which everyone bears a responsibility that must be given close attention and handled well. Current proposals on the need to conserve energy resources are not temporary measures adopted because energy resources are presently in short supply, but measures taken so that future energy resources will be plentiful, for which reason all manner of means should be adopted to conserve our country's energy resources.

Comrade Ling Chunxi [0407 4783 6932] of the Energy Research Office, Comprehensive Survey Association, Chinese Academy of Sciences said: "A look at the economic growth of the world's leading industrial nations will show that the amount of increase in energy consumption is directly proportional to the growth of their national economies. For example, during the 1960's Japan's energy consumption grew most rapidly and the total output value of the national economy was also most rapid; during the 1970's, growth of energy consumption was slowest and total output value of the economy was also slowest. The situation in our own country is like this too. During the First Five-Year Plan, growth of energy consumption was at its fastest with an average annual increase of 15 percent, and growth of total output value of agriculture and industry was also fastest with an average annual increase of 10.9 percent. From this it may be seen that development of modernized production requires a corresponding amount of energy without which it is difficult to have large-scale growth of either production or construction. During the past several years, owing to the destruction caused by Lin Biao and the 'gang of four,' a serious imbalances in the proportion of our national economy has occurred with the production of energy falling far short of the needs of the 'Four Modernizations.' Though our country possesses rather abundant energy resources, the development period required for energy is quite long and during the past several years there has been no large growth in the production of our country's coal, petroleum, and natural gas. For this reason we must seek every possible means to conserve energy, and in the process of conservation seek increased production. This is the most realistic and most dependable path."

Comrade Zhao Zongyu [6392 1350 3603], general engineer of the Petrochemical Institute of the Ministry of Petroleum said: "We ordinarily treat coal, petroleum, and gas as fuels when, in fact, this is very incomplete. Petroleum, gas, and coal are all very important fuels, but they are also extremely precious industrial raw materials and we depend on them for food, clothing, work, and shelter. Take petroleum, for example. Industrial products now possible to be refined out of petroleum include more than 3,000 kinds of plastics, rubber, and synthetic fibers." Comrade Chao Zongyu also said, "Coal, petroleum, and gas are nonrenewable energy. Considering the amount of known world reserves available for development, petroleum will last for 30 years and coal may last for more than 200 years at the current level of consumption. Though new oil fields and coalfields may be discovered in the future, consumption levels will also rise, extraction will become increasingly difficult, and costs will become higher and higher. Still another process will be required for the universal application of nuclear energy and other new energies. We cannot wait until energy resources are on the verge of depletion before taking measures. We must begin now to deal seriously with energy conservation and problems of its effective use. Even if nuclear energy and other new forms of energy can be generally used, they still only solve the energy problem but cannot take the place of industrial raw materials. It can be seen that energy

conservation is truly an important matter of strategic significance, and we must do something about this matter without further delay."

Great Potential Exists for the Conservation of Energy

After analyzing the present state of energy consumption in our country, comrades attending the symposium concluded that a great potential now exists for our country's conservation of energy.

Comrade Wen Zhilian [3306 6347 1670] of the Fuels Bureau of the General State Materials Bureau said: "Due to a low level of technical management of the economy of our country, the utilization rate of heat energy from fuels is very low. For example, since last year we have conducted tests at selected points on heat balance at 15 enterprises in the five cities of Beijing, Shanghai, Xian, Harbin, and Hangzhou. Testing found that the lowest effective utilization rate for heat energy from fuel in these enterprises was only 16 percent, and the highest was 30 percent. At the No 1 Xian Knitting Mill, steam loss amounted to 20 percent of the total volume of steam. It can be seen that energy conservation in our country has a great potential." General engineer Zhao Zongao continued, saying: "The energy utilization rate in some advanced industrial countries is higher than ours as, for example, in Japan in 1975 where it was 36.4 percent, or in West Germany in 1970 where it was 37.2 percent, or in the United Kingdom where it was 40 percent, or in the United States where it was 51 percent. They are striving to further improve it. For example, Japan requires a 10.8 percent improvement in the energy utilization rate by 1985, and the United States believes that there is between a 30 and 40 percent potential, at least, in civilian and industrial use of energy. In our country, with its heat energy utilization rate from fuel at 28 percent, a 10 or 20 percent improvement is entirely possible. If we increase by 10 percent annually our heating efficiency for coal consumption, that would amount to an annual increase in production of 220 million tons of coal. For this reason some people call the energy thus saved the fifth energy source, and this makes a lot of sense."

Strengthened Management and Innovative Technology Is a Key Means of Saving Energy

The symposium also looked into ways to conserve energy. The comrades felt that poor management produces a startling waste of energy. Unmeasured use of energy, lack of accounting, loss of coal and escape of steam into the air exists everywhere. Only by strengthening management can we plug these leaks. Comrade Liang Huaizhi [2733 2037 1807] of the Beijing Guanghua Textile Dyeing Plant said: "It takes 3.1 million tons of water annually for my plant's production, and all of this water derives from underground. During the past few years, as a result of the growth of construction in the capital and the constant increase in the amount of water used by both industry and the civilian populace, the underground water table has

dramatically declined. In order to prevent this having an effect on production, we organized a three-combination special unit for conserving water, which recovered a large amount of waste water flushed away for reuse after treatment. Between 1970 and 1978, 600,000 tons of waste water were recovered annually. Water use for the first 3 quarters of this year was 9,027 tons less than for the same period last year for a saving in coal of 725 tons.

Comrade Lei Te [7191 3676] of the Beijing No 5 Glass Plant spoke briefly about experiences in arousing the masses to make a great effort at technological innovation to conserve energy. He said: "Since 1973 our plant has several times conducted technological innovation, improved equipment, and gained very good results in energy conservation. In 1973 smelting furnaces working day and night smelted about 0.6 tons of glass per square meter; in 1978 this increased to 1.1 tons. Between January and September of this year the consumption of fuel per ton of finished goods per month declined by 24.3 percent for a saving of 2,178.5 tons of heavy oil. Currently, production of 1 ton of glass products requires an expenditure of heat energy that is only 30 percent of 1973.

Overall Planning and Equitable Use of Energy

In the campaign to save energy, both the dissemination of experiences in saving energy and the adoption of technology to save energy requires overall planning and a beginning from reality with no sudden cures. Comrade Sun Dezhou [1327 1795 0719] of the Science and Technology Committee of the Ministry of Electric Power Industry raised many concrete examples in the course of his statement to explain this problem. He said: "For example, efficiency is very low for a coal burning locomotive, no more than about 8 percent. Through the use of an internal combustion locomotive that burns oil, efficiency can reach 25 percent and the heat energy utilization rate can be raised 17 percent. The efficiency of coal-burning electric plants is 32 percent, but if a change were made to diesel engines that burn oil to generate electricity, the efficiency rate could reach 35 percent, but there is a limit to increases in efficiency rate. In comparing the two, by using oil in a locomotive versus using it in an electric plant, the heat energy utilization rate would be increased by between 24 and 25 percent. It may be seen that use of coal to generate electricity rather than in locomotives is a more effective use of energy. Further, use of low heat value fuels such as bone coal or gangue, the amount of heat per kilogram is only 1,000 to 1,500 kilocalories. Such fuel burns only with difficulty and if it is used in boilers at power stations as a substitute for bituminous coal, efficiency will drop 30 percent; if used in industrial boilers, efficiency will drop 15 percent; but if burned to produce lime for civilian use, there will be virtually no decline in efficiency. Three different uses, three different efficiencies. The difference in value of decline of relative efficiency is very great and relative energy use differs from one to several hundred percent."

Need To Use Economic Methods To Manage Energy

Some comrades at the symposium advocated use of economic methods to manage energy. Comrade Liu Guopei [0491 0948 3099], deputy chief of the Beijing Municipal Electric Supply Bureau said: "Beijing used to have 220,000 household users of electricity who used electricity in common and were billed in common. Users who paid partly in kind and partly in cash had monthly electric bills averaging 4 and 5 times higher than residents in general, and they were responsible for only one-fourth of the bill. In this way the state had to subsidize electricity expenditures to the tune of 9.5 million yuan per year with a waste of electricity amounting to 38.8 million kw hours. Now there are close to 100,000 households throughout the city who have had their method of payment changed with consequent benefits in the conservation of electricity, savings in expenditures by the state, no increases in individual payments, and safe use of electricity. At the Capital Steel Plant, electricity cost 1.5 fen per watt and the company had to subsidize electricity use in the amount of several hundred thousand yuan annually. But after changes were made and each household had an electric meter installed, the line load declined 30 percent with a saving in electricity each year of 3 million kw hours, and the state's subsidy was less by 400,000 yuan. Were reform to be instituted citywide in 220,000 households, only 5.54 million yuan would have to be invested in electric meters, but the subsidy could be reduced by 9.5 million yuan, for a saving in electricity of 38.8 million kw hours. Comrade Guo Tingjie [6753 1694 2638] of the Capital Steel Company said: "Use of economic methods to manage energy sources would prevent inequities. Recently, quite a few cadres concerned about energy have been asking why Capital Steel with its advanced technology (Capital Steel uses converters to smelt steel requiring less waste of energy than the open hearth process) and under conditions in which the varieties of steel it produces are straightforward, and though its utilization coefficient for furnaces was high during the first half of the year, and though it was a champion in coke ratio for smelting steel in 13 economic and technological criteria, its ratio of energy use per ton of steel in overall criteria stood third in the country? This is a good question. I believe the main reason lies in emphasizing only major criteria as advanced while neglecting the secondary criteria. The major criteria for winning the championship played a role in promoting a decline in the consumption of energy per ton of steel, but reliance solely on a few important criteria to reduce energy consumption is greatly inadequate. In the implementation of an economic policy of each according to his labor, one cannot also simply give attention to the capture of a single championship prize while ignoring other rewards. I advocate bringing overall energy conservation criteria into line with economic and technological criteria."

Everyone Shares Responsibility for Conservation of Energy

Comrade Xu Shoubo [1776 1108 3134], member of the Energy Policy Study Unit of the State Scientific Commission and Deputy Director of the Beijing

Energy Society, said: "There are two different conceptions of the conservation of energy. One is narrow, calling for conservation in direct consumption of energy, such as conservation of 1 jin of coal, 1 drop of oil, or 1 kw hour of electricity. Then there is the broader means of energy conservation, which touches everybody. Every product requires consumption of energy for its production and transportation. For example, production of a ton of steel requires consumption of energy (including fuel and electricity) in the amount of 2 1/2 tons of standard coal; 1 ton of cement consumes 250 kilograms of standard coal for its production; a standard length of cotton yarn consumes 314 kw hours of electricity for its production; and production of 1 ton of sugar consumes 0.78 tons of standard coal. Therefore, to conserve all sorts of goods is to conserve energy. Presently the utilization rate nationwide for steel is about 60 percent; were this to be increased to 70 percent, a saving of energy amounting to about 7.5 million tons could be effected. It can be seen that conservation of energy is related to people working in every walk of life, and even to save a single sheet of paper is to conserve energy. Therefore, through attention to conservation of energy, everybody can make a contribution. We must foster a social atmosphere of conservation of energy and conservation of all goods."

Advanced Energy Conservation Techniques Promoted

Tianjin TIANJIN RIBAO in Chinese 22 Nov 79 p 1

[Article: "Promote Adoption of Advanced Energy Conservation Techniques"]

[Text] Adopting and promoting advanced energy conservation techniques is an important way to lower consumption, increase production, save energy and help alleviate the fuel shortage.

The adoption and promotion of energy conservation techniques is a necessity for improving the rate of energy use and accelerating the Four Modernizations, as well as an important measure adopted by Tianjin in keeping with our actual conditions. The utilization rate of energy resources in Tianjin's industrial system now averages about 25 percent, which is half the energy utilization rate of advanced foreign countries with the same amount of energy resources. Apart from energy management, this is mainly due to technological backwardness. Many plants and enterprises use old equipment, old techniques and old technology in production so that energy consumption is high, which affects production costs. There are a great many advantages if technical reforms are carried out and advanced energy conservation techniques are adopted on this foundation. For a long time the Tianjin Chemical Plant continued to use graphite anode diaphragm cells for producing caustic soda, which uses a lot of electricity. In the last 2 years they have adopted metallic anode diaphragm cells. Compared with the past, this advanced energy-saving technique of the 70s has saved 200 kwh of electricity for every ton of caustic soda produced, assuming high quality and greater output.

Although Tianjin has made some achievements by promoting and adopting advanced energy conservation techniques, it should be noted that the number of units which have adopted such techniques is still small and the application is rather narrow. For example, there are over 30,000 vehicles belonging to the municipal department of transportation and its bureaus which could use advanced fuel conservation techniques of an improved carburetor, but only one-fifth have it. If an additional one-fifth of the units adopted this advanced technique it could save over 3,000 tons of gasoline a year. If all the cars in the city for private or civil use adopted these oil conservation techniques we could save even more gasoline. Thus the thorough and speedy promotion of advanced energy conservation techniques is an important task that cannot be belittled, but should be given sufficient consideration.

Vigorous conservation of energy resources requires reliance on the strength of science and technology. In some highly industrialized countries science and technology are taken very seriously. The study and application of advanced techniques is treated as a means of competition, and is considered the life line of an enterprise. If we are to conserve energy and carry out the Four Socialist Modernizations, we too should rely on advanced science and technology. Many units already understand from practice that to rely purely on physical strength and equipment to lower energy consumption, increase production and improve product quality is very difficult. If we never understand, study or use advanced techniques, but continue in the same old ways and fall far behind others, how will we be able to make more contributions to the Four Modernizations?

In the past few years, especially after the National Conference on Science and Technology, concerned municipal offices adopted some solutions which could be implemented to promote and adopt advanced energy conservation techniques. This is an excellent starting point. If close coordination is achieved among research, materiel, and plants, continued efforts can certainly accelerate the pace of Tianjin's adoption and promotion of advanced energy conservation techniques to make an appropriate contribution to the Four Modernizations.

Tianjin Succeeds in Advanced Energy Conservation Techniques

Tianjin TIANJIN RIBAO in Chinese 22 Nov 79 p 1

[Article: "Tianjin Achieves Excellent Results in Promoting and Adopting Advanced Energy Conservation Techniques"]

[Text] Tianjin has had excellent results in promoting and adopting advanced energy conservation techniques. These energy conservation techniques are: far infrared drying, (oil conservation) in steel rolling heating furnaces, optimizing fuel conservation in automobile carburetors, the adoption of metallic anode diaphragm cells, high pressure jet well

drilling, the use of solar energy, and saving coal and conserving electricity in thermal power plants, etc. These have played a major role in increasing the production of electricity and fuel, lowering energy consumption and raising product quality. According to statistics provided by the offices concerned, the far infrared heating technique alone adopted by over 200 units in the city in the first 10 months of this year saved over 10 million kWh.

The advanced energy conservation techniques adopted by Tianjin were gradually developed on the foundation of the masses' technological reform after study of advanced experiences at home and abroad. Especially in the last 2 years with developments in science and technology, new techniques, technology and material appeared constantly. Under circumstances of increasing production and shortages of fuel, for many units the need to adopt advanced energy conservation techniques became more and more urgent. Oil fields, power generating plants, steel rolling mills, the soda production industry, the communications and transportation system and a large group of firms adopted advanced energy conservation techniques. The technique most commonly adopted and developed is far infrared drying. By the end of June of last year only 2 or 3 industries in the city had adopted this technique, a dozen units with an installed capacity of only 2,300 kw, but by the end of this September, this had increased to over 30 industries, over 200 units with an installed capacity increased to over 17,000 kw.

The leadership at all levels put considerable emphasis on the promotion and application of advanced energy saving techniques. In order to promote such techniques as quickly as possible, the Bureau of Metallurgy conscientiously strengthened its leadership. To deal with the problem in which the steel rolling trades were all using water-cooling methods for their steel-rolling heating furnaces, with the result that heat losses were great, the thermal efficiency of the boilers was low, and the expenditure of fuel oil high, they vigorously promoted the experience of Steel Rolling Mill #1 and other units which had adopted oil conservation techniques for their steel-rolling heating furnaces. At present, the steel rolling industry has adopted this advanced oil-conservation technique on a broad scale and during the first 10 months of 1979, more than 17,000 tons of oil were saved.

The relevant departments took concrete measures to resolve the problems encountered in the adoption of energy conservation techniques by various units. When the far infrared drying technique was first promoted, many units had trouble adopting it because there were no primary parts or paint. Addressing this question, the concerned municipal departments included the production of primary parts and paint in the plan and arranged for 4 production plants and 2 processing points. The units can do far infrared sanding and spray painting free of charge. All the infrared parts needed by the city can now be supplied, in addition to supplying them to other districts.

The effectiveness of the advanced energy conservation techniques adopted by industries and units in Tianjin are very clear. Shipping Company No 1 of the Bureau of Communications installed fuel conservancy devices in 900 Liberation trucks and similar models which can save 10-15 percent of the gasoline under moderate driving conditions. This saved over 100 tons of fuel between January and October of 1979 alone. In the first 9 months of 1979, new techniques such as jiaoqiu [5231 3808] cleansing of steam turbine condensers adopted for 10 generators of the thermal power plants of the Electric Power Bureau have saved over 20,000 tons of coal. The Dagang [1129 3263] Oil Field has adopted new high pressure jet drilling techniques so that the average monthly mechanized drill speed has increased more than 30 percent which has accelerated development and construction of the oil field.

Structural Materials Company Praised for Conservation Effort

Tianjin TIANJIN RIBAO in Chinese 23 Nov 79 p 2

[Article by Gu Enshou [7357 1869 1108]: "A Structural Materials Company Achieves Good Energy Conservation"]

[Text] The city's architectural materials company has exerted efforts to increase production and at the same time has thought of many ways to conserve energy. Between the first and third quarters of this year, the amount of coal used to steam-cure each cubic meter of concrete dropped by 23.68 percent compared to that of the same period last year. The amount of electricity consumed for the production of each cubic meter of concrete dropped 20.09 percent compared to that of the same period last year. Compared to the same period last year, these constituted a saving of 2,490 tons of coal and 652,190 kwh of electricity.

The structural materials company is a bulk user of coal and electricity. Since the beginning of this year, this company has grasped energy conservation, worked tightly, and reduced consumption of coal and electricity. It took the quotas for coal and electricity consumption as important norms for the examination of performance of each subsidiary plant, and ordered concerned departments to take sole charge of the work of energy conservation and concretely strengthen management of the supply of steam and consumption of fuel. In the past, management work lagged behind, each individual unit had serious problems in energy wastage. Some units did not control steam strictly and steam to be used for steam-cured concrete for prefab structural materials was channeled by pipes elsewhere for cooking. In some cases, the main steam was used for 2 or 3 hours just to heat one or two lunchboxes. They made the following calculations: A 2-inch pipe supplying steam for 1 hour consumes 80 kilograms of coal. If it is allowed to operate 2 or 3 hours, there would be a waste of between 200 and 250 kilograms of coal. After management of the supply of steam was strengthened, heating meals for all the staff and workers was done at once.

Misuse of steam designated for production was strictly prohibited. As to the supply of steam for the steam cure pit, if the amount of prefabricated structural materials was insufficient, steam was not supplied. The quality of the structural materials was also strictly inspected to stop structurally weak material from having to return to the pit for further treatment. They also summarized the company's actual situation of production and rebuilt and remodeled the present boilers so that some of the manually operated firing boilers were rebuilt as zigzag type boilers, row boilers or chain boilers. This raised the firing efficiency, reduced the labor intensity of the workers and conserved fuel, and the carbon content of the dregs of the boilers satisfied the requirements required by the state. This company also popularized the advanced experiments of limited use of coal and the use of a coal-burning counter installed on the boiler of the No 2 structural materials plant. The average consumption of coal of the whole company per cubic meter of concrete dropped by 21 kilograms. They also strengthened maintenance of the facilities, did well the work of keeping the pipes warm and eliminated wastage of energy. They also conscientiously solved the electromechanical equipment that performed like "big horses pulling small carts" and adjusted nine of the big generators. Just this adjustment alone conserved over 174,000 kwh of electricity a month. Throughout the company, 90 large and unnecessary lightbulbs above 100 watts were removed, saving over 27,000 kwh of electricity a month.

Rug Factory Cuts Coal Consumption by 15 Percent

Tianjin TIANJIN RIBAO in Chinese 23 Nov 79 p 2

[Article by Zhang Jiming [1728 4949 2494]: "First Rug Factory Lowers Coal Usage"]

[Text] Since the beginning of this year, the city's First Rug Plant has taken conservation of coal as a great task and has achieved remarkable results. In the period of half a year, the entire plant conserved 384 tons of coal, the amount of consumption dropping by 15 percent from that of the same period last year.

The First Rug Plant has a total of three 4-ton boilers. They use about 17 tons of coal a day, and a maximum may reach 33 tons. Since April of this year, they have analyzed each link in the use of coal to conserve its use and arranged to solve each one. First they strengthened management at the coal bins and implemented planned use of coal throughout the plant. The plant's office in charge of power supply issued guidelines for the use of coal each month and each day to the boiler room and set up levels of coal consumption for each shift so that workers would be aware of them.

The boilers of this plant burn only good quality coal and do not utilize second grade coal well. To simultaneously reduce the consumption of the amount of coal and to enable the boiler to "take" second grade coal, they utilized the opportunity of doing major repairs on the boiler to improve the design of the boiler arch so that second grade coal could burn more

easily once inside the boiler. At the same time, the time of burning of pieces of coal which had not completely burned up was increased. As the boiler was being used, they also paid strict attention to control the quality of water. Water of unsatisfactory quality was not allowed to flow into the boiler. Maintenance workers inspected the pipes of the boilers and all the equipment using steam throughout the plant every day before work and after work. Problems that were discovered were solved in a timely manner.

This plant also paid special attention to the fact that many of the boiler-room workers are young and their technical skills are low and forcefully grasped technical training of young workers to help them heighten the level of their technical skills. This year, the rug company conducted a technical skills examination and the plant's boilerroom group received an average grade topping all others.

Big Waster of Power Makes Dramatic Turnabout

Tianjin TIANJIN RIBAO in Chinese 23 Nov 79 p 2

[Article by Lu Shishu [6424 1102 3055]: "Plant Goes From Third to First Category in Energy Consumption"]

[Text] The Tianjin City wool fabric plant has forcefully grasped implementation of conservation measures, changing itself from a plant of the third category to a plant of the first category in energy consumption.

The plant is one of the prime users of energy in the city's textile industry. In the past, the use of electricity at the plant was not examined, the use of coal was not according to plans, consumption was high. "Lights that were on forever," "big horses pulling small carts," "black smoke coming out from the chimneys" and such phenomena were serious. In July of this year, the textile industry bureau inspected this plant's energy consumption and graded it as a third category plant.

The inspection was a stimulus to the plant's leadership. They learned new instructions issued by the higher authorities regarding conservation of energy and took conservation work as a big task, strengthened a special staff of the leadership group in conservation, initiated the masses to seek out the weak links, drew up regulations, implemented measures and turned the conservation work around. In August, the bureau conducted an inspection and graded the plant as a second category plant. After becoming a second category plant, this plant's leadership did not loosen up on their efforts, was not satisfied, but continued to grasp conservation of coal and electricity. First, to change the situation of "eating from the big bowl" in the use of coal, a coal feeding counter was installed on the boiler in the boiler room so that the amount of coal used by each shift was recorded and accounted for, achieving a differentiation of the good and the bad (users). Second, the electrical equipment under the

responsibility of the day shift electrical workers was divided into three areas of jurisdiction and a system of responsibility according to area, was set up, thus placing responsibility onto the people, clarifying ambiguity of responsibility, eliminating wastefulness and vacancies in responsibilities. Third, regulation of reward and punishment for energy consumption was drafted and guidelines in the use of electricity and coal were issued to all departments. The use of energy was accounted for every month. Those who conserved energy were rewarded. Those who wasted energy were punished. Implementation of each measure made energy conservation work remarkably effective. In September when the bureau came for another inspection, the plant was judged to be a first category plant in the consumption of energy. Between January and October of this year, the amount of electricity used for production of every hundred jin of wool top was lower than that of the same period in the past by 15.6 kwh of electricity, and a drop of 7.6 kwh from that of the same period last year. The amount of coal used for production of every hundred jin of the material was less than the best level of the same period in the past by 193 kilograms, and a drop of 25 kilograms from that of the same period last year.

Machine Tool Plant Makes Use of Recycled Oil

Tianjin TIANJIN RIBAO in Chinese 27 Nov 79 p 1

[Article by Liu Xianwu [0491 2009 2976]: "First Machine Tool Plant Builds Working Waste Oil Recycling Facility"]

[Text] The city's First Machine Tool Plant has successfully built a waste lubricating oil recycling technological process and facility. The recycled waste oil has been repeatedly determined to be pure and clean, reaching the national standard for new oil.

This plant changes over 30 tons of waste oil each year on its equipment and test runs of production machinery. In the past, this waste oil was all sold to the petroleum company's wholesale department at a cheap price. To conserve energy for the state, comrades of the facilities department of this plant learned from fraternal units the use of indigenous methods to recycle waste oil. After many experiments, the method of mixing the ingredients was gradually grasped and the pattern of recycling waste oil was understood. New lubricating oil of pure, clean quality was extracted from dirty oil.

To expand the capability of recycling waste oil, they exerted their own efforts and used their own time and took half a year to design and build a waste oil recycling technological process facility with extensive help from the city's bureau of financial administration. This facility can recycle 80 tons of waste oil a year. Besides satisfying the plant's own needs, it can also reprocess waste oil for fraternal plants.

Knitting Mill Harnesses Surplus Heat

Tianjin TIANJIN RIBAO in Chinese 27 Nov 79 p 1

[Article by Ju Wenxian [1446 2429 2009] and Chen Baoquan [7115 1405 0356]: "Tianjin Knitting Mill Saves Great Amount of Coal, Water, Electricity"]

[Text] Tianjin city's knitting mill fully utilizes surplus heat from the power plant and its own underground water to conserve large amounts of coal, water and electricity for the state. It not only develops production but also benefits the lives of the staff and workers.

Tianjin city's knitting mill is a large knitwear producer. The whole production process requires large amounts of water, electricity and steam. In the past, this mill had always used coal as the source of fuel. Each year, over 27,800 tons of coal were used for production and living. To conserve energy, this plant negotiated with the nearby No 1 power plant to prepare for the utilization of surplus heat of the power plant as fuel. With the all-out support from the No 1 power plant, a network of heating channels was set up throughout the mill. Steam was substituted for the burning of coal and a yearly savings of over 24,000 tons of coal for the state was realized. In addition, this mill also utilized steam to set up food heating stations for the staff and workers, and the staff and workers were able to enjoy hot food.

In fully utilizing the power plant's surplus heat, the Tianjin city knitting mill also actively explored the use of underground water. They used hot water wells to set up "hot spring" type showers for the staff and workers, replacing the use of coal to heat bath water. This can save over 3,880 tons of coal each year.

New Combustion, Preheat Facilities Promise Big Energy Savings

Tianjin TIANJIN RIBAO in Chinese 27 Nov 79 p 1

[Article: "Developing New Combustion and Preheat Facilities"]

[Text] Since the beginning of the year, the Industrial Furnace Research Laboratory of the Tianjin Design Institute of the First Ministry of Machine Building has, with help from production units, actively developed and popularized self-preheating firing nozzles, even flame nozzles, radial preheaters and such new types of firing devices and preheating equipment which have conserved energy greatly.

This laboratory has learned that at present, the self-preheating firing nozzle is being widely used in foreign countries for heat processing in the machine industry. This rather advanced firing device eliminates the use of the preheater. Waste heat inside the nozzle is used to preheat air.

Preheating with air can produce an amount of heat equivalent to half the temperature of the furnace. Therefore, a large amount of energy is saved and quality of the products from heating is good. But this firing device is patented abroad and the sale price is high. This laboratory's engineers and technicians exercised their spirit of self-reliance, repeatedly studied the scant information they had, and developed a self-preheating nozzle. In September of this year, they took their design drawings to the First Steel Wire Plant and with the help of this plant, they developed this type of nozzle and used it in the heat treatment furnace for steel wire. After nearly a month of experiments, the results were proven to be good. One self-preheating nozzle replaced the 12 original nozzles on the furnace. The rate of throwing flames of the new nozzle was faster, the temperature inside the furnace was evenly distributed, and it could save 40 percent on fuel and the quality of the heated products was good. In October of this year, this research laboratory's engineers and technicians also went to the city's heavy machinery plant and used the even flame nozzle on a trial basis on the heating furnace for forging. The use of this nozzle shortened the time for raising the temperatures from over 4 hours originally to only over 1 hour. The quality of the heated products was good, and between 20 percent and 30 percent could be saved on fuel.

This laboratory also actively helped the production units modernize pre-heating installations to conserve energy. In June of this year, comrades of this research laboratory went to the First Tractor Plant of Luoyang with the task of energy conservation assigned to them by the First Ministry of Machine Building. With the help of concerned units, they first modernized the preheating device of the plant's 1-ton No 3 furnace. They went deeply into practice, humbly listened to the opinions of the workers and technicians, and directed attention specifically to the existing problems of the furnace, designing and improving the radial preheater. Since July of this year when the device was installed, the results have been good. Originally, coal gas could only preheat to 150 degrees but now it can preheat to 360 degrees, with a rapid rise in temperature. In 1 hour, the furnace temperature could be raised to between 1,350 and 1,400 degrees. Retrieval of waste heat increased and it could save over 15 percent on fuel. Work efficiency was raised, and work efficiency on large and small jobs could be raised to above 20 percent on the average. At the same time, it prolonged the life of the preheater. This modernization successfully opened up a new path for energy conservation.

Colliery Does Its Part To Save Energy

Beijing BEIJING RIBAO in Chinese 27 Nov 79 p 1

[Article by Song Shengli [1345 0524 0448]: "320,000 Kilowatt Hours of Electricity Conserved in 10 Months by Dashihe Colliery"]

[Text] In the campaign to conserve electricity while seeking to increase production, by the end of October the Dashihe Colliery of the Capital Steel and Mining Company had completed 93.22 percent of its planned extraction of coal for the entire year. In 10 months it had saved a total of 226,267 kwh of electricity.

The Dashihe Colliery is a unit that consumes quite a bit of electricity. During the early part of this year they made a general check of electricity use throughout the colliery and directed that shops solve, within a limited period of time, problems in the unreasonable uses of electricity that were discovered. Throughout the colliery, in offices, warehouses, colliery buildings, and dormitories, more than 500 100-watt lightbulbs were replaced with lightbulbs of under 60 watts. Eight shops designated people to be solely responsible for overseeing illumination in the stope, in colliery buildings, and in offices, and they replaced 10 lighting transformers in the colliery of upwards of 100 kilowatt volt-ampere capacity with 50 kilowatt volt-ampere ones. Inasmuch as a perforator was no longer used, they got rid of 10 transformers used to control the perforators, thereby eliminating waste. At the same time some unnecessary lighting and electric heaters were removed from the colliery, greatly diminishing consumption of electric power.

Significant Results Obtained in Recovery of Waste Oil

Beijing BEIJING RIBAO in Chinese 27 Nov 79 p 1

[Article by Shi Jiye [4258 6060 2814]: "Turn in the Old for a Supply of New; Promote Conservation of Oil. Annual Recovery of Waste Oil in this City Amounts to One-Fourth of the Total Supply of New Oil"]

[Text] Since the beginning of last year, this city has adopted the practice of having old lubricating oil and wash oil turned in, in order to get new oil as part of the vigorous promotion of the recovery and use of oil. The waste oil recovered annually amounts to more than one-fourth the total supply of new oil. During the first 3 quarters of this year, more than 8,200 tons of waste oil were recovered throughout the city from which more than 5,000 tons of good oil were refined. After used lubricating oil and wash oil has been refined and has additives added, its quality is completely in conformity with nationally prescribed technical standards. In this way not only are resources conserved but benefits are derived from diminished environmental pollution. In order to encourage units to recover waste oil,

this city began last year to adopt the practice of turning in the old for a supply of the new, which means that for every liter of waste oil sold to the state, the petroleum company will supply 110 percent of new oil, and for every liter of used wash oil sold the state, 125 percent of new oil will be provided. For plants, mines, and enterprises that have themselves the capability to regenerate waste oil, the petroleum company will give 130 percent new oil for every liter refined. Once the supply of new in exchange for old was instituted, many units enhanced management of lubricating oils for their equipment and of waste oil recovery activities. They placed someone in charge of their waste oil, stored it according to its category, and the broad masses of employees found many and varied ways to recover waste oil such as catching it in containers, soaking it up with cotton waste, water-digestion reclamation, and skimming. Many a little makes a mickle. This was very effective. Shops in many plants have changed their habit of having oil all over the place with the entire floor covered with sawdust. Now they are bright and clean with refined production.

Oil Refinery Milks More Mileage From Its Heating Furnaces

Beijing BEIJING RIBAO in Chinese 27 Nov 79 p 1

[Article by Zhao Feipeng [6392 7378 7720]: "East Is Red Oil Refinery Strives To Increase Heat Efficiency of Its Heating Furnaces. Increase in Heat Efficiency of 37 Heating Furnaces Greatly Reduces Fuel Consumption"]

[Text] The East Is Red Petroleum Refinery of the Yanshan Federation of Petrochemical Companies has used every manner of means to increase the heat efficiency of its heating furnaces to conserve energy. From a 1977 average of 65 percent heating efficiency, the 27 heating furnaces throughout the refinery have been improved to their present 78 percent for a great reduction in fuel consumption.

The heating furnaces are major facilities for the refinery's petroleum processing. The various heating furnaces in the East Is Red Refinery have an annual consumption of fuel oil (gas) in excess of 60 percent of the total fuel oil (gas) used in the entire refinery. In the campaign to increase production and practice conservation, they have made the conservation of energy their direction of main attack. They have aroused the masses, have conducted conscientious investigation of heating furnace consumption throughout the plant, and have found that the principal reason for the low heating efficiency of the heating furnaces lies in management, with the furnaces not being operated at their optimum so that they cannot make full use of fuel. Taking aim at this state of affairs, they conducted the classes to train stokers throughout the refinery, as well as train the shop directors of every furnace unit and their associated technicians, enabling them to study earnestly and apply the operating experiences of brother petroleum refineries. Since July of this year they have also conducted

heating furnace heat efficiency competitions throughout the refinery with standards for individual furnaces being set according to actual performance, and then making monthly appraisals with winners being awarded commendations and prizes in order to promote vigorously good management of the furnaces and an improvement in heating efficiency. The distillation of fuel oil and fuel gas amounts to 20 percent and in excess of 9 percent respectively of the total consumption of fuel oil and gas for the plant. Last year, when the heat efficiency of the heating furnaces was checked, two of the furnaces were operating at a heat efficiency of only about 67 percent. During the heating furnace competition, the workers painstakingly operated the furnaces and, without regard for hardships, climbed to the tops of the furnaces several times each day to make adjustments to conform to changed conditions and make the heating efficiency of the furnaces steadily climb. Now the heat efficiency of the two furnaces is in excess of 78 percent for an average monthly saving in fuel oil of 500 tons with a value of more than 22,000 yuan.

This refinery is still giving steady attention to innovations and improvements in the heating furnaces, and it has adopted 10 technical measures to improve heat efficiency. Owing to low heating efficiency, the two heating furnaces in the No 3 distillation shop annually lost heat in flue gas equivalent to more than 15,000 tons of fuel oil. In order to make fullest use of this volume of heat, they conducted a joint equipment check and repair in concert with brother units and installed a rotary air pre-heating device. They used a drawing fan to draw in the flue gas and a ventilating fan to push in air at normal temperature. Heat exchange took place in the preheating device raising the temperature of the air to about 200°C after which it was sent into the furnace to raise the temperature of the furnace chamber. In July of this year, after improvements succeeded and they were formally adopted for use, the heating rate for normal pressure furnaces rose more than 10 percent over what it had previously been to reach 87 percent, and consumption of fuel oil decreased by about 15 percent.

Quota System Cuts Coal Consumption at Refractory Plant

Beijing BEIJING RIBAO in Chinese 27 Nov 79 p 1

[Article by Yu Fei [0060 7378]: "More Than 1,600 Tons of Coal Saved in 10 Months"]

[Text] The Beijing Refractory Materials Plant has instituted fixed quota management of coal used in production, and this year both coal consumption per ton of refractory materials produced and the amount of coal remaining in furnace ashes has declined to the lowest level ever for a saving for the state between January and October of 1,627 tons of coal.

This plant annually consumes 23,000 tons of coal. During the early part of this year they made a statistical survey of the 32 pieces of equipment that consume coal throughout the plant to calculate coal consumption norms for each of them. Then, on the basis of the production plan, they prescribed monthly, quarterly, and annual coal consumption quotas for the plant's 20 products that consume coal in their manufacture, issuing fuel quota drawing certificates and coal use cards for each of them. The plant's supply section also changed its methods for supplying coal and organized drivers of dumptrucks and loaders, measuring personnel, and coalyard management personnel into a continuous unit for supplying coal. Each month coal is delivered according to plan, thereby benefiting production and promoting management. Stokers in shops where coal is burned took aim at the many changes in the kinds of coal used by the plant, which constituted a difficulty for coal conservation, and launched a technological attack on the problem. They were able to work out rather advanced operating techniques that resulted in a saving of 593 tons of coal during the period January through October. The down-draft kilns used in the high alumina shop are old kilns from the 1950's. Formerly they took more than 1 ton of coal to bake 1 ton of bricks and were known as "coal devourers." In order to cut the "devouring" of coal, this shop set up a problem-tackling unit, which courageously adopted use of new methods for installing kilns and scientific methods for firing kilns, and expanded kiln capacity by 20 percent, with the result that for each ton of bricks, consumption of coal declined from 1,300 kilograms to 946 kilograms.

New Technology, Management Bring Decline in Energy Consumption

Shanghai JIEFANG RIBAO in Chinese 27 Nov 79 p 2

[Article: "General Decline in Per Unit Consumption of Coal and Electric Power by City's Big Consumers Through Strengthening of Management of Quotas for Energy Resources and Promotion of New Technology for Conservation of Energy"]

[Text] A general decline has occurred in per unit consumption of coal and electric power by large consumers as the result of a determined campaign to increase production while practicing conservation that has also seen an assured growth in production through the practice of energy conservation. Statistics show that as of the present, coal consumption by 85 percent of the 930 big consumers throughout the city has reached the most advanced level ever. Savings in coal by these units account for more than 70 percent of total savings throughout the city. In the case of 26 large consumers of electric power, the per unit consumption of electricity in the production of 36 different items has reached or surpassed most advanced levels for an aggregate saving of 100.2 million kilowatt hours or almost one-third the citywide saving in electric power.

This year employees on the industrial, transportation and communication and capital construction fronts started a campaign to increase production

and practice conservation centering on high quality, high production, wide varieties of goods, and low consumption that would seek increased production through conservation. The metallurgical industry, the chemical industry, the textile industry, the machine industry, light industry, and the handicraft industry bureaus strengthened management over energy resources quotas to bring about a general decline in per unit consumption. The Shanghai Fuel Company indicates that it has instituted ration cards for the more than 2,900 units using coal citywide. For the 930 plants and enterprises among these whose monthly coal consumption is upwards of 50 tons, they have instituted monthly checks on sales and preferential supply. This year these units are giving stringent attention to energy resources management with quotas for factory teams and groups and individual use being closely watched. This has brought about heartening results in the conservation of energy resources. Statistics show that between January and September of this year, these 930 consumers saved 247,000 tons of coal over the same period last year, fuel oil 120,000 tons, and coke 120,000 tons. Of these consumers, 747 plants and enterprises consumed less coal than their best previous level.

In the conservation of energy resources this year, each unit has, in addition to continuous attacks on coal, electric power, and petroleum devourers, also directed great attention to the promotion of new energy-saving technology for key equipment. The Municipal Handicrafts Bureau has adopted far infrared technology for its more than 1,100 pieces of under 600 kwh electric heating equipment for an annual saving of more than 11 million kwh of electric power. After two workshops of the Shanggang No 5 Plant used plastic to wrap the waterpipes of their steel rolling heat furnaces and perlite to insulate the furnace walls, average consumption of oil per ton of steel produced declined from the more than 60 liters of last year to more than 50 liters, a saving in oil in excess of 30 percent.

Many plants and enterprises this year linked conservation of energy resources to the economic welfare of employees with the institution of conservation awards. A chemical fertilizer company instituted a method whereby an award of from 3 to 6 yuan would be given anyone who conserved 1 ton of coal or 1,000 kwh of electric power below the prescribed norm. Between January and October of this year, the chemical fertilizer plant increased production 15.7 percent over the same period last year, paying 2.8 times as much in profits to higher authorities while saving more than 33,000 kwh of electric power and more than 116,000 tons of coal with both quantity of production and per unit consumption attaining the best levels ever.

Shanghai Registers Widespread Savings in Energy Usage

Shanghai JIEFANG RIBAO in Chinese 27 Nov 79 p 2

[Article by Zhao Weiguo [6392 5898 0948]: "Electric Power Consumption Declines; Output Value Rises at 5,703 Plants During Third Quarter"]

[Text] Following improved management over electric power use during the third quarter, a gradual decline has occurred in 5,703 Shanghai plants accompanied by a gradual rise in the value of production.

Experiences of these plants in conserving electricity while increasing production at the same time fall into three major categories:

First is the use of new technology and new techniques as well as innovations and improvements in old equipment. They applied the new technology of far infrared heating to electric driers, which use the most electricity and which have been in use for a long time, for a saving of more than one-third of electric power. Transformer stations also replaced the original motor-driven generators with silicon controlled rectifiers, and currently two lines have begun operation for a saving in electric power of more than one-half.

Second is strict control of "devourers of electric power" and the proscription of the use of "large horses to draw small carts." For heat treating and surface treating workshops with rather large electric power consumption, they formulated regulations for concentrating furnace operation for the treatments whereby furnace operation 3 times a week replaced operation every day of the week. Operation of the 8 meter and 3.2 meter saltpeter furnaces, for example, requires consumption of 2,400 kwh of electric power. Since implementation of the regulations, 30 furnaces were cut from operation with savings of 72,000 kwh of electricity.

Third is the installation of 60 electric meters in each of the shops, the setting of norms for electricity use, and strict supervision. Additionally, similar measures were adopted for electricity consumption in the illumination of offices and living areas. It was clearly stipulated that lightbulbs in offices could not be larger than 40 watts, and in bachelor dormitories no larger than 30 watts. At the same time, the deputy plant manager himself led appropriate personnel in a series of inspections to replace large bulbs with small, to reduce the number of lights, to remove those that should not have been installed, and to refuse installation of anything that did not really have to be installed in order to plug the leaks. As a result of these measures, more than 50 kilowatt hours of electricity were saved daily, and in September 1,300 kwh of electricity that would otherwise have been used for illumination was saved.

Chemical Fiber Plant Saves Electricity, Coal and Water

Shanghai JIEFANG RIBAO in Chinese 27 Nov 79 p 2

[Article: "No 9 Chemical Fiber Plant Shows Marked Achievements in Energy Conservation"]

[Text] The Shanghai No 9 Chemical Fiber Plant's leadership has given serious attention to conserving energy, adopting down-to-earth measures and looking everywhere to achieve this end. Between January and September of this year, quality steadily rose, quantity of production exceeded quota, and consumption of energy greatly declined with a saving of 440,000 kwh of electric power amounting to 7.2 percent of the total electricity consumption for the plant. Conservation of coal amounted to 385.9 tons or 12 percent of total plant consumption of coal; and conservation of water amounted to 4.67 million tons or 15.8 percent of water consumption for the entire plant.

Early this year the party committee of the plant called for the entire plant to "not forget conservation of energy in production and conserve energy for the Four Modernizations," instituting "three elucidations" for every employee in the plant as follows: One, elucidate our country's current energy situation, making clear that the conservation of energy resources is not merely a temporary expedient but a long-term strategic plan; two, elucidate the consumption of energy of the textile industry, pointing out that for the nationwide preservation of light industry and the textile industry, we will give more attention to conservation using careful calculation and strict budgeting; and three, elucidate energy conservation objectives and plans for the entire plant, launching among the employees a discussion of, "What can I do for conservation?" Following the "three elucidations," the employees realized the important significance of energy conservation, and energy conservation became a mass awareness movement.

This plant established an energy conservation leadership unit headed by the deputy plant director to look into the situation in energy consumption, to come to grips with problems, and to adopt conservation measures. They made thoroughgoing investigations of energy consumption for electricity, for boilers, and for cooling throughout the plant. Then, proceeding on the basis of priorities, they formulated the principle of, "one, continue; two, reduce; and three, stop." Continuous production or that which cannot be interrupted should be maintained. Equipment that can be temporarily shut down, such as for follow-on spinning of short strands, should have its operating times reduced; and supplementary production as well as production that can be done at other times should occasionally be stopped. At the same time they grasped the key points and concentrated their forces to solve the plantwide problem of the five "devourers of electricity," the three "devourers of steam," and the three "devourers of water," achieving results across the board in the conservation of coal, electric power and water.

Shipyard Fulfills Energy Conservation Goals

Shanghai JIEFANG RIBAO in Chinese 27 Nov 79 p 2

[Article by Yang Baoyu [2799 1405 5940]: "Municipal Shipbuilding System Completes Full Year's Energy Conservation Plan in Excess of Quota"]

[Text] Every yard in the municipal shipbuilding system has fulfilled its energy conservation tasks for the entire year in excess of quota to score an all-around victory. As of the present time, the entire shipbuilding industry has saved this year 2.86 million kwh of electricity, completing 178.75 percent of the annual plan; 707 tons of petroleum, in fulfillment of 214 percent of the annual plan; and 721 tons of coal, completing 100.18 percent of the annual plan.

Throughout this year the Shanghai shipbuilding industry system has fastened on five matters in its conservation of energy resources. First has been a strengthening of management over energy resources with a sensible formulation of consumption quotas and minimization of waste; second has been the launching of technical innovation, the uncovering of potential, and the general application of the new technology of far infrared heating to strive for conservation through innovation; third has been a great effort for comprehensive use, seeking every way possible to use residual heat; fourth has been a focus on the major links in energy consumption with a concentration of efforts toward attacking key areas to reduce per unit consumption; and fifth has been enhanced conservation of electricity for use in illumination.

'Power Muddle' Resolved, Steel Mill Becomes Model Power Saver

Shanghai JIEFANG RIBAO in Chinese 30 Nov 79 p 2

[Article: "Power Muddle Is Not a Muddle Anymore"]

[Text] This reporter has learned from concerned sources that the Shanghai No 1 Steel Plant has shaken off its label as a "power muddle." During the first 10 months of this year, the plant conserved over 15.3 million kwh of electricity at the same time it overfulfilled the eight economic goals, each degree of electricity's average value of production increased 11 percent over that of the same period last year. The achievement in conservation of electricity has made it the leader of the entire city's 26 prime users of electricity.

The Shanghai No 1 Steel Plant uses over 100,000 kwh of electricity every day. Some years ago, the plant's leaders believed that big operations can be a little wasteful and did not take conservation of electricity seriously. Among the leading cadres of the plant nobody grasped the work of planned use of electricity. The plant's party committee also failed to hold special meetings to study conservation of

electricity. The whole plant's use of electricity was characterized by a free flow of electricity, lights that were lit all the time, water flowed continuously, steam steamed constantly, large horses were pulling small carts, shutting off the furnace but not the fan and such wasteful use of electricity which could be seen everywhere. The amount of electricity consumed for each product depended upon how much electricity was used in the end and was accounted for by back railings of the expenses and post distribution of the expenses. Unit consumption rose along with the amount of production increase and increased production did not bring in increased earnings. The plant was regarded as a "power muddle" plant by concerned leading departments. In October 1977, the plant was reported to the authorities and criticized. The leadership then grasped the work of conservation for a while and the situation of power conservation improved for a while and the "power muddle" was cleared away. But since the beginning of this year, the power supply department implemented the policy of adjustment of the national economy. Power for metallurgy was partly redistributed to support production of the light industries and textile industries. Facing this new situation, the Shanghai No 1 Steel Plant's consumption of electricity again rose and the "power muddle" emerged again. In June, the plant was again cited and criticized.

After the plant was criticized again, the staff and workers commented and expressed their feelings about the plant leadership. They asked: Why is it that our plant's efforts to conserve energy goes back and forth? What is the reason for our plant to be in a muddle sometimes and at other times our plant is not in a muddle? The opinions of the masses forced the plant leadership to pay attention to this problem. They joined thoughts and actuality and analyzed the use of electricity in the past and found the answer: The root cause of the "power muddle" was the leadership. When leading cadres held muddled ideas about conserving the use of electricity, "power muddle" emerged. They pointed out that after the plant was criticized, they established an antiwastefulness leadership group to grasp conservation of electricity and achieved some results. Although this was done, in the depths of the minds of some cadres, the belief that steel was "the commander" existed and that every profession and every industry must support it. Therefore one should not worry about not having any electricity and as long as production can rise there is no problem with using a little more electricity. Therefore, with a little bit of achievement in conservation of electricity, they were satisfied and believed that their duty has been fulfilled and the antiwastefulness leadership group silently dissolved. Some procedures became formalities. In this way, a "power muddle" emerged again. It was because of the ideological muddle that brought about the muddle in the use of electricity. This time, they took conservation of energy as a strategic task. Based on the heightened ideological recognition on the part of the leading cadre and the political education in energy conservation conducted throughout the entire plant, many staff members and workers realized that in the question of using electricity, "by using a little bit more we will take over a large part of the light and textile industries." This realization prompted many more people to take conservation of electricity into consideration.

Based on heightening ideological recognition the Shanghai No 1 Steel Plant's leaders again organized the masses for discussion and drew up a series of measures for conserving the use of electricity and established an electricity management leadership group led by the plant manager. The system of work post responsibility was made clear, and "regulations for management of electricity" were drawn up. A record file for inspection and maintenance of electric meters was established and detailed records were made of inspections of electric meters, their unit, serial number, personnel, time and operating cycle for reference. These measures are practical, and the situation of "power muddle" was rapidly changed after their implementation. In addition, the plant's leadership also encouraged working shifts in shops to improve technology, reinstall equipment, utilize surplus heat and steam or reduce consumption of electric power. The motor department made reasonable arrangements of the five water pumps rooms and shut down operation of five water pumps. This conserved 4 million kw. of electricity a year. The steel rolling shop analyzed the use of electricity of the three shifts and included the consumption of electricity as an item of examination and competition. The use of electricity visibly dropped, and in September the amount of electricity consumed per unit ton of steel set an advanced level for the entire nation.

Conservation Steps Bring Less Pollution, Higher Production

Shanghai JIEFANG RIBAO in Chinese 30 Nov 79 p 2

[Article by Lu Maoxuan [7120 5399 6513]: "Chemical Industry Conserves Energy, Increases Production"]

[Text] The leadership at all levels of the Chemical Industry Bureau has taken measures to seek increased production in conservation and to seek speedy production in conservation and has achieved remarkable results. From January to October of this year, the bureau's total value of production increased 6.8 percent over that of the same period last year and profits grew 12.4 percent from that of the same period last year while consumption of electricity dropped by 4.6 percent from the amount used during the same period last year, the amount of coal consumption dropped 10 percent from that of the same period last year and oil consumption dropped 30 percent from that of the same period last year.

This year, this bureau's most outstanding problem in production is: slashing of electricity and reduction in fuel oil and serious shortage of energy supplies. To solve this problem and assure that the production of the chemical industry has a definite amount of growth, the bureau's leaders have taken a series of steps:

This is strengthening leadership in energy conservation work. In bureaus, companies and businesses, leadership groups and offices for energy conservation have been set up on a wide scale. This year, the bureau enterprise system held four meetings to exchange experience and held an exhibit of the

results of energy conservation to push forward the further development of energy conservation work.

The second is broad mobilization of the masses to make careful calculations and strict budgeting in the use of energy. Each enterprise has broadly initiated the masses to account for every drop of energy, to explore every corner for potential conservation of energy and to think of many ways to conserve even 1 jin of coal, 1 drop of fuel oil, and 1 kilowatt hour of electricity and to strive to produce even more products with even less consumption. The Shanghai Solvents Plant mobilized everyone many times this year to contribute towards energy conservation. Between January and September, the entire plant implemented 31 effective energy conservation measures. In the national "energy conservation month" activity, this plant again proposed 21 energy conservation measures. Between January and October of this year, the total production of solvents increased 19 percent over that of the same period last year while the amount of consumption of fuel oil dropped by 3.7 percent from that of the same period last year, a total saving of 7,778 tons of fuel oil.

The third is the popularization of new energy conservation techniques. As of the end of September, heating facilities with a capacity of 5,890 kw throughout the entire bureau have already utilized the new technique of far infrared rays and consumption of electricity has remarkably dropped. The major product of the Liaoyuan Chemical Plant is caustic soda. Originally the plant used positive insulated film electrolysis. This method consumed a lot of electricity and is known as an "electricity tiger." Since the plant began to use titanium as base material covered with calcium compounds as the active layer on the surface for use as the positive electrode, conservation of electricity has been remarkable. Between January and October of this year, the production of caustic soda registered an increase of 4,430 tons over that of the same period last year while the amount of electricity used compared to that of the same period last year registered a savings of about 6.3 million kwh of electricity.

The fourth is comprehensive utilization. In chemical production, surplus heat and waste gases and surplus heat in the waste water produced in chemical reactions have not been utilized much in the past. This year, this work has been more conscientiously grasped and good results have been obtained. The catalytic and cracking installation for petroleum of the Shanghai Refinery produces large amounts of high temperature smoke which is released into the air during the course of production. Recently, with the support and coordination from concerned scientific research units, a new facility for eliminating the three wastes and for utilization of surplus heat energy from petroleum cracking--our nation's first--was successfully developed. The facility went into full operation in October. It can save 2,000 kw of electricity each hour and it has opened up a new path toward conservation and increased production and toward complete elimination of environmental pollution. The Wusong Chemical Fertilizer Plant newly built a 75 kw hydroelectric generator using the high pressure

and circulating waste water produced during the course of production of chemical fertilizers to generate electricity. Between the end of September and the present time, the generator has already generated over 57,000 kwh of electricity. This generator group generates a surplus of 10 kw every day because it has a rich source of hydropower.

The fifth is the launching of socialist labor competition whose major content is energy conservation. Boiler rooms of over 70 units of the whole bureau have launched competitions in management of the coal bins, rebuilding the boilers and elimination of dust, reducing the consumption of coal by 5-10 percent on a wide scale. Pollution by the "three wastes" has also been reduced. The chemical fertilizer and agricultural chemical industry company has actively organized socialist labor competitions in conservation of coal and electricity as the central themes and used these as important standards for examinations and for the awarding of rewards. This pushed production forward. Between January and October of this year, production of synthetic ammonia registered an increase of 15.7 percent over that of the same period last year while the amount of electricity used registered a drop of 15.3 percent from that of the same period last year and coal consumption dropped 19.3 percent from that of the same period last year.

The sixth is strengthening the dispatch of supplies, supplying only those units chosen to be worthy, adjusting the supply throughout the bureau, and taking care of those having a shortage in supplies. The bureau's industry has made reasonable adjustments in the course of organizing production, alternated operations to avoid peak usage during the daytime and operating more during late night to raise the efficiency in the use of electricity. The Wusong Chemical Plant frequently uses the method of cutting off peak usage to fill the lull in usage by operating the carbide furnace for production at night. Between January and October of this year, the entire plant conserved 5,441 kwh of electricity. This bureau also exercised punishment by ordering the two enterprises which are poorly managed and which consume large amounts of energy to cease production and to reorganize themselves within a certain time limit. Priority in the supply of energy is given to the production of products by the chemical plants for supporting agriculture and for defense, light industry and textile industry.

Employees Report Big Fuel Oil Savings at Shengli Refinery

Beijing BEIJING RIBAO in Chinese 8 Dec 79 p 2

[Article by Zhang Hongli [1728 3163 4409], Li Ming [2621 2494] and Dong Shuzhan [5516 3219 3564]: "Shandong Petroleum Refinery Employees of Shengli Main Petrochemical Plant Conserve Large Quantities of Fuel Oil"]

[Text] Employees at the Petroleum Refinery of the Shengli Main Petrochemical Plant in Shandong have adopted effective technical measures to

conserve energy resources and use them in a comprehensive way to achieve success.

This refinery has a total of 40 boilers and heating furnaces of various kinds. The employees gave attention to sensible adjustments in the draft doors, the oil feed, the steam valves, and the opening of the flue damper, promoting advanced experiences in such matters and improved the heating efficiency of the furnaces. The average heating efficiency of the furnaces throughout the refinery is now 77.5 percent, which meets the required specifications of the petroleum department and the chemical department. The catalytic cracking equipment at the petroleum refinery produces large amounts of regenerated flue gas at temperatures in excess of 500°C. They improved the technical design to direct these flue gases through the boilers once again, and they successfully experimented with the burning of a mixture of carbon monoxide gas and fuel oil in two of the boilers. The employees tried water sealing, and high, medium, and low pressure pipe network storage methods, virtually controlled the burning of the torch, and put to use the routinely produced gases that had been drawn off. Between January and October, they saved 65,900 tons of the fuel oil called for in the plan.

Wire Plant Is Pacesetter in Energy Conservation Movement

Beijing BEIJING RIBAO in Chinese 8 Dec 79 p 2

[Article by Zhu Pengxiang [2612 7720 4382], Wang Liande [3769 6647 1795], and Liu Jizhang [0491 4949 4545]: "Harbin Electric Wire Plant Establishes Energy Management System"]

[Text] As part of its readjustment, the Harbin Electric Wire Plant has gradually established a rather complete energy management system to conserve large amounts of energy. Since 1977, it has annually conserved 4 million kwh of electric power, coal sufficient for the plant's needs for 3 months, and petroleum equalling the plant's consumption for 2 months. Electric wire production has increased annually by an average 38 percent, and the plant has been elected a pacesetter among advanced work units in "planned use of electric power, conservation of electric power, and mass handling of electric power" in the northeastern region.

They launched a large campaign of general check-up on the amount of consumption in each workshop, warehouse, office, and dormitory where equipment or appliances that consumed fuel were in use. Then, having ascertained how the energy was being used, they instituted a system of rationing coupons and planned use of electric power. By using energy consumption coupons, electricity coupons, and notification on electric power consumption, they compiled daily statistics, conducted checks every 10 days, and meted out rewards and punishments by the month, thereby greatly arousing the enthusiasm of employees throughout the entire plant for the conservation of energy resources by every possible means.

In order to effect further conservation of energy, they set about improving the 84 pieces of equipment in the plant with high energy consumption and low productivity. At the same time they also adopted new technologies including far infrared, catalytic combustion, and hot-air circulation to strive for increased production while conserving energy. In order to conserve energy resources, they also gradually established an energy resources management body, and the entire plant, from top to bottom, set up energy resources management structures, formed consolidated mass energy resources management networks, and organized a leadership unit for plantwide conservation of energy resources composed of the Party Committee deputy secretary, the deputy plant manager, and 14 section chiefs. In each of the 30 electric power consuming units they established 5-man energy resources management teams comprising cadres, technical personnel and veteran workers.

Gradually, a system of rules and regulations was established for the management of energy, the use of energy, and the conservation of energy; a clear division of labor and a system of personal responsibility was stipulated for energy resources management organizations and personnel at each level, and standards were instituted for the interrelationship of tasks in the management of energy resources within the plant and for every energy link from the time the energy reaches the plant where it is inspected and accepted, to its issuance, its use, and its conservation, so that energy resources conservation would be planned, standardized, and systematized.

Petroleum Company Says 20,000 Tons of Oil Saved

Tianjin TIANJIN RIBAO in Chinese 19 Dec 79 p 2

[Article by Wang Jinzhong [3769 6855 1813] and Zhang Kaisheng [1728 0418 3932]: "More than 20,000 Tons of Petroleum Saved this Year. Petroleum Company Adopts Measures to Spur Plants To Conserve Petroleum"]

[Text] This city's petroleum company has adopted vigorous measures to spur plants and enterprises in our city to practice conservation in the use of petroleum. Between January and the first 10 days of December, 20,500 tons of refined petroleum products have been saved throughout the city, fulfilling 28 percent of the planned petroleum conservation for the entire year. The value of the oil products conserved amounts to more than 2.2 million yuan.

In order to promote petroleum conservation, this company has teamed with related units to run several training programs in the conservation of oil and has convened on-the-spot meetings and forums. The petroleum company has also delved into plants and oil wells to get an understanding of levels of consumption, from which knowledge it has gradually worked out rules and regulations for the use of petroleum, and has helped some units improve their petroleum management systems. This year, petroleum has been

distributed on a trial basis through a unified rationing system based on the number of vehicles and machines, with checks being made and certificates and cards being filled out for vehicles, machines, and tools throughout the city. On the principle of increased petroleum for increased numbers of machines and decreased petroleum for decreased numbers of machines, impetus has been given to planned use of petroleum and planned conservation of petroleum in every plant, mine, and enterprise. Beginning this year, a system of criteria for deductions in advance for petroleum to be recovered has been instituted within the rationing system in order to make each unit that uses petroleum do a conscientious job in the recovery of used lubricants. A system of proportional rewards has been set up for personnel responsible for such recovery. As of the end of November, a total of 638 tons of waste oil had been recovered for an almost 8-fold increase over the same period last year.

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EFFECTS OF 'ENERGY CONSERVATION MONTH' ANALYZED

Shanghai JIEFANG RIBAO in Chinese 27 Dec 79 p 3

[Article: "Pleasing Results in First National 'Energy Conservation Month'"]

[Text] Gross Value of Industrial Output Up 14 Percent; Energy Consumption Declines

Since the launching of the first national "energy conservation month" in November of this year, there has been a decline in the various kinds of energy consumption and gratifying results in increasing production through energy conservation. According to statistics, during November the gross value of industrial output for the entire nation grew 14.2 percent, while the amount of coal allotted by the state increased only 2.3 percent. At the same time, fuel oil allotments were reduced 2.2 percent and the industrial consumption of power was also lower than the growth of the gross value of industrial output.

This particular "energy conservation month" was the first mass increase-production-and-economy movement since 1949 to center around reducing energy consumption. It received widespread recognition and support from the masses, cadres, and technical personnel in every profession and region. During the "energy conservation month," from the central regions to the outlying areas, every trade and profession launched broad propaganda campaigns to save energy. At the same time they conducted major energy utilization surveys and major studies on energy conservation work, ascertaining how energy was being utilized and unearthing potential for saving energy.

During "energy conservation month," many areas and professions throughout the country energetically summarized and promoted advanced energy-saving techniques and experiences, launching energy-saving contests within their own professions. During October, the per ton oil consumed in the cogging process for the cogging shop of the Shanghai Xinhu Steel Mill dropped to 47.3 kg, setting a national record for rolling mills of this type. On the first day of "energy conservation month," the Shanghai Municipal Metallurgical Bureau publicized the experience of the Xinhu Steel Mill, and proposed

struggling for the goal of having the average monthly oil consumption per unit of all the cogging and rolling mills in the city reduced to less than 50 kg by the end of the year. The No 630 Cogging Shops of Shanggang Mills 1, 2, and 3 immediately launched campaigns to learn from Xinhu so they could catch up. During November the per ton oil consumed in cogging for No 630 rolling mills was reduced to 47.1 kg in Shanggang Mill No 1, which was lower than that of the Xinhu Steel Mill. Shanggang Mill No 2 also hurried to catch up and reduced its consumption to 49.9 kg, achieving the goal proposed by the Shanghai Metallurgy Bureau ahead of time.

As leading comrades responsible for energy conservation work in the State Economic Commission pointed out, the "energy conservation month" campaign is merely a beginning, and development is still not balanced. Every region, profession, and enterprise should conscientiously strengthen its leadership with regard to energy conservation, carrying out thorough surveys on energy resources, accelerating the establishment and strengthening of energy management agencies, vigorously promoting various energy-saving experiences and advanced techniques, commending and rewarding advanced energy-saving enterprises, groups and individuals, and implementing the necessary economic sanctions against those enterprises which exceed their energy consumption quotas over a long period of time. We must regularize and systematize energy conservation work, and continue to emphasize it seriously.

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BRIEFS

WASTE OIL RECYCLED--Tianjin city's Hydraulic Press Parts Plant has built its own oil filter and cleanser and although in use for only 2 months and 8 days, the machine has saved the state over 9,700 jin of motor oil. This plant has a total of over 100 various lathes requiring periodic repairs, maintenance and oil changes. The motor oil that was replaced every time was not useable because it contained too much impurities and was treated as waste. Last year alone, over 16,000 jin of motor oil was treated as such. In the movement to increase production and conserve, this plant, in order to retrieve and utilize waste oil, organized the workers and technicians in a cooperative effort to repeatedly study and use new techniques of retrieval and regeneration of waste oil. They successfully built an oil filter and cleanser by themselves which made it easy to change oil in the lathes. The device benefits production and permits the reuse of waste oil. [Excerpts] [Tianjin TIANJIN RIBAO in Chinese 17 Nov 79 p 1] 9296

AUTOMOBILE FUEL CONSERVATION--To actively promote the new energy conservation technology, the city's automobile association held a meeting on 22 November to report the experiences of automobile fuel conservation technology. At the meeting, engineer Geng Zhili [5105 1807 4539] of the city's public transportation company reported on technological activities in automobile fuel conservation in the nation. The deputy chief engineer of the city's bureau of transportation, Han Rongmao [7281 2837 5399], reported on remodeling and exploring the potential of "Liberation Brand" engines. The model of energy conservation and driver of the No 3 Garage of the city's public transportation Niu Chengpeng [3662 4453 7720] reported on his experiences in the work of conservation of automobile fuel. [Tianjin TIANJIN RIBAO in Chinese 27 Nov 79 p 1] 9296

SHIPYARD CONSERVES ELECTRICITY--A young electrician in the hull workshop of the Shanghai Shipyard, through conscientious acquisition of the experiences of his predecessors, not long ago successfully test produced an AT-320 direct current zero-load electric welding machine for automatic stopping of the machine with a saving in electricity. Formerly, when the electric welder was not in use, the welding machine continued to idle and consume electricity. With the installation of this device, the machine

will automatically shut off when not in use and will start up again automatically when required for use, thus saving electricity. As determined through actual use of this device both out on the wharves and on the slipways, a saving of 36 percent and 15 percent respectively in electricity was effected. If the almost 100 direct current electric welding machines in the Shanghai Shipyard were fitted with this device, an annual saving of 200,000 kwh of electricity annually would be possible. [Text] [Shanghai JIEFANG RIBAO in Chinese 27 Nov 79 p 2] 9432

SICHUAN MOTOR TRANSPORT SAVES GAS--The Mianyang Motor Transport Company is one of the foremost expanded autonomous pilot enterprises in Sichuan Province. During this year the company has not only conscientiously checked on the consumption of gasoline as an important criterion in overall awards for production safety, but has also instituted a system for rewards and indemnities for fuel consumption. Using 10 percent of the value of gasoline saved as reward money, they have followed the following concrete system for rewarding drivers and associated persons responsible for declines in consumption of fuel. For the saving of 1 liter of fuel, an award of 6.5 fen of which the driver receives 3.5 fen, the maintenance crew 2 fen, and the personnel in charge of motor car units and motorcar stations one-half fen each. If there is a shortfall of 1 liter of fuel, the driver must pay 3.5 fen. This system has greatly aroused the enthusiasm of the drivers and associated personnel for fuel conservation. Between January and October of this year the 623 passenger cars and trucks conserved fuel with one of them saving almost 10,000 liters. Most of the vehicles have saved about 2,000 liters. [Text] [Beijing CONGRREN RIBAO in Chinese 8 Dec 79 p 2] 9432

ENERGY CONSERVATION TECHNOLOGY EXHIBIT--11 December--Tianjin opens an energy conservation technology exhibit at the First Worker's Cultural Palace. The exhibit was set up by the city's concerned organs for the "Energy Conservation Month" movement. The exhibit included sections on the conservation of coal, oil, electricity and water. The exhibit features a technical film on the aspects of both domestic and foreign energy conservation as well as special reports on organizing energy conservation. In addition, some materials are on exhibit such as solar water heaters, honeycomb briquets, and far infrared coatings, etc. For the purpose of spreading the new energy conservation technology, there are foreign and domestic publications on the subject as well as a question-and-answer section. [Tianjin TIANJIN RIBAO in Chinese 12 Dec 79 p 1]

FUEL EFFICIENT CARBUREATORS--In taking a firm hold on management of petroleum quotas, the Transportation Bureau has formulated measures for uncovering potential for the conservation of energy resources and has achieved outstanding results through active promotion of new technology in automobile carburetors that optimize conservation of fuel. Between January and November of this year a total saving in gasoline of 3,674,437 liters was effected. The new automobile carburetor technology that optimizes fuel

consumption is the foremost new technology being stressed for promotion by pertinent units in the country. This year the Transportation Bureau promoted throughout the entire bureau this new automobile carburetor technology for the optimization of fuel consumption, and already 87 percent of its vehicles have had this new equipment installed to save fuel. [Tianjin TIANJIN RIBAO in Chinese 19 Dec 79 p 2] 9432

TIANJIN BOILER IMPROVEMENTS--This city's electric cable plant has achieved outstanding success in the active conservation of energy resources. Between January and October of this year, an accumulated saving in fuel oil amounting to 1,763 tons has been effected over the same period last year. Energy consumption indicators show steady decline each month with October showing a saving of oil amounting to 1.4 tons per 10,000 yuan of output value and a saving of electric power amounting to 940 kilowatt hours per 10,000 yuan of output value, the best record ever. This year this plant carried out improvements on boiler equipment in two places where consumption was greatest. After improvements were made to the aluminum smelting furnaces, the average monthly consumption of petroleum declined from 81 tons to 52 tons for a decline of 35 percent and an annual saving in oil of 348 tons. [Tianjin TIANJIN RIBAO in Chinese 19 Dec 79 p 2] 9432

MOTOR VEHICLE FUEL SAVINGS--The motor vehicle unit belonging to the Food Bureau of this city has taken steps to conserve energy resources and bring about a rapid decline in gasoline consumption. Between January and October of this year, it saved a total of more than 42,000 liters of gasoline, a 5-fold increase over the same period last year. The figures for fuel conservation by this unit for the past several years has been low. Beginning last year, it instituted a system of individual awards for fuel conservation, with additional awards for those making special contributions. For those who exceeded prescribed consumption levels, individual accumulations toward rewards for the month were canceled and fines proportional to the excess consumption were levied in addition. Now more than 97 percent of the drivers in the unit are able to save fuel. Because the measures taken have teeth, the average consumption of gasoline per 100 ton kilometer during the month of October this year for the entire vehicle unit was 11 liters, the best level ever attained. [Tianjin TIANJIN RIBAO in Chinese 19 Dec 79 p 2] 9432

HEILONGJIANG GASOLINE CONVERSION--Harbin, 24 Dec--Industrial and communications departments in Heilongjiang are vigorously popularizing two gasoline conservation techniques for motor vehicles. As of the end of November, these techniques had been applied to over 30,000 motor vehicles in the province. It is estimated that more than 20,000 dun of gasoline can be conserved a year. Application of these techniques will, according to exports, amount to a 10 to 15 percent savings without reducing the vehicle's power. [0W021305 Beijing Xinhua Domestic Service in Chinese 0122 GMT 24 Dec 79 0W]

ALTERNATE ENERGY
SOURCES EXPLORED

EXPLOITATION OF SOLAR, GEOTHERMAL ENERGY RESOURCES URGED

Beijing BEIJING RIBAO in Chinese 2 Dec 79 p 1

[Article by Zhou Hongduo [0719 7703 6995]: "Broadening Sources of Income and Reducing Expenditures Must Be Handled Jointly"]

[Text] Recently, this newspaper's editorial department invited some specialists in the field of energy resources science and technology, and some comrades in charge of energy work for a joint session on energy resources economic problems. Comrades participating in the forum talked from different angles about the development and conservation of energy resources in terms of their important role in the development of the national economy. They felt that energy resources constitute an important material foundation for the realization of socialist modernization, and that in both the present period of adjustment to the national economy and in the future period of high-speed development, serious attention must be given to the equitable development and use of energy resources so that an equitable proportionalism may be maintained in the development of the national economy and the development of energy resources. This will be a guarantee of the high-speed development of the national economy.

"Energy Conservation" Is the Fifth Energy Source

At the forum, everybody expressed quite a few views centering on the problem of conservation of energy resources. Comrade Zhao Zongao [6392 1350 3603], the director of the Beijing Energy Resources Society and chief engineer for the Petrochemical Institute, said that the energy resources problem is a very important one and that every activity of mankind is bound up with energy resources. If there is to be rapid realization of our country's Four Modernizations, not only must energy resources be actively developed, but vigorous efforts must be taken to conserve energy as well with maximum attention being given to effectiveness in use of energy resources. The world now sees the conservation of energy resources as "the fifth conventional energy source," ranking it with coal, petroleum, natural gas, and hydroelectric power, the four conventional energy sources. This fully illustrates why the position and function of energy resources

conservation in the development of the national economy is so vitally important. Some comrades said that often people used to believe that our country possessed abundant energy resources, and that they could never be exhausted. It is for this reason that their thinking gives inadequate attention to "energy conservation," and that extravagance creates extremely great waste. Nowadays, even though people emphasize "energy conservation" in their thinking, concrete measures have not kept pace and conservation and waste continue to exist side by side. In the manufacture of boilers, for example, elimination of the "devourers" is called for and yet at the same time boilers that consume much coal continue to be produced to bring new "devourers" into the world.

Need To Eliminate "Devourers of Electric Power"

Comrade Shi Tanding [1597 0982 0002] of the Beijing Municipal Electric Supply Bureau said, "conservation of energy" requires not only the elimination of the "coal devourers" but of the "electric power devourers" as well. Today, there is a tendency in this city for another increase in some electric power consumption. Statistics show that consumption of electricity per 10,000 yuan of output value has gone up year by year. In 1977, it was 2,898.2 kwh; in 1978, it was 2,980.9 kwh when 153.3 million kwh of excess electricity were used in the entire year; from January through May 1979, consumption of electricity per 10,000 yuan of output value rose to 3,061.3 kwh as compared with 2,943.2 kwh for the same period in 1978 for an excess use of electricity totaling 9,943.5 million kwh. The reasons for such waste, he felt, lay in large growth of heavy industry and small growth of light industry with no elimination of "devourers of electricity" in heavy industrial enterprises. Still another reason was that medium and small enterprises, which were large consumers of electricity, had unplanned growth. For example, carbide production in Beijing used to be more than self-sufficient, and though the No 2 Chemical Plant's carbide furnaces are not operating at full capacity, there are seven other small carbide furnaces throughout the city that are producing. Not only is the quality of their product poor, but their consumption of electric power is high. For every ton of carbide produced, electric power consumption is in excess of 4,000 kwh, about 1,000 kwh more than the power consumption of the No 2 Chemical Plant. The annual waste runs to 6 million kwh of electricity. He also said that not only do we want to eliminate the "devourer of electricity" in production but eliminate the "devourer of electricity" in our daily lives. The Party Central Committee and the State Council have called upon us to conserve 1 jin of coal, 1 drop of oil, 1 kwh of electricity, 1 cubic meter of coal gas, and 1 ton of steam, with everybody contributing to the conservation of energy resources. But some leadership cadres give no serious attention to "energy conservation." In short, comrades at the forum unanimously felt that for the "energy conservation" leaders must first take it seriously and treat "energy conservation" work as an important matter in the adjustment of the national economy. Secondly, the weak links in policy, in measures taken, and in energy resources management have to be taken in hand with "energy conservation" work being routinized and systematized.

Abundant Geothermal and Solar Energy Resources

Everybody also conducted a discussion of problems in the development, use, and spread of new energy resources. The deputy director of the Beijing Municipal Geology Bureau, Comrade Ren Xiang [0117 3276], spoke briefly on Beijing's geothermal energy resources. He said that geothermal energy resources in Beijing Municipality are abundant. Based only on preliminary prospecting in a 50-square-kilometer area in the southeastern environs, each day and night about 50,000 tons of hot water is available for use. Water temperature is about 50 degrees and in some places it reaches about 70 degrees. Everyone was pleased with this excellent natural energy resource, but if management problems continue unsolved for any length of time, creating unplanned exploitation and use without leadership, with anybody sinking a well who has the money and then retaining the well as the private property of the unit or department once it has been sunk, great waste will be created. He also said the earth's heat is a national resource that should be under the unified leadership of the government and be uniformly funded in both development and use. Only in this way can a satisfactory solution be found in overall use, environmental protection, the prevention of corrosion, and backflowing and maintenance problems. Comrade Tian Xiaoping [3944 1420 1627] of the Beijing Solar Energy Institute said that solar energy is a new energy source that has received serious international attention but that it is still in the research and experimental use stage, though developments take place very rapidly. Beijing's solar energy resources are abundant, each year averaging in excess of 2,700 hours of sunlight. In recent years we have achieved preliminary success in expanding applications of solar energy, for example in the application of solar energy to hot water devices. At the present time, the area exposed to daylight for heat accumulating devices throughout the city amounts to 40,000 square meters, which is a 27-fold increase over 1975. For each square meter, between 40 and 50 liters of hot water can be supplied for a saving of 4 tons of coal. In a year 16,000 tons of coal can be saved in this way. Use of solar energy to heat buildings and dry grain is being intensively experimented with. He pointed out that if there are to be advances in the use of solar energy, scientific research work will have to be intensified with efforts made to reduce equipment costs and improve cost effectiveness, and adjustments to pertinent policies will also be required to encourage people to use it.

Good Prospects for Methane Gas Development

Comrade Lin Jinyin [5677 6855 0603] of the Beijing Municipal Methane Gas Office talked briefly about the city's promotion of methane gas use. He said that farmers have hailed methane-generating pits as "pits of good fortune for the farmers and pits for the liberation of women." These pits not only can solve daily fuel needs for farmers but they also expand use of organic fertilizer to increase the fertility of the soil. At the same time, in their promotion of the development of the pig-raising industry,

sanitary conditions in rural villages are improved with the elimination of filth and the eradication of diseases, all of which have played an active role. Since 1975, more than 30,000 methane-generating pits have been built throughout the city, among which half can routinely produce gas. As many as 100 production teams have gone into methane gas production. Since methane gas is so good, why doesn't it develop rapidly? He said the main reason is that leaders do not give it adequate attention. Therefore, if good work in methane is to be truly done, three problems must be solved. First is a strengthening of leadership; second is provision of operating expenses; and third is provision of the materials. In fact, the amount of operating expenses and materials needed to produce methane gas are not much, and every effort should be made to provide them.

Japanese Experience in 'Energy Conservation'

At the forum, the secretary of the Standing Committee of the Beijing Energy Resources Society, Comrade Gao Bo [7559 0590], summarized Japanese experiences in the use of energy resources. He said that even though Japan is a have-not nation in energy resources, everyone widely acknowledges it to be a country with rather rapid industrial development. Reasons for post-war Japan's rather rapid industrial growth were not only the special international environment prevailing at the time and rather strong domestic scientific and cultural conditions, but also timely changes in energy resources organizations for the rational use of energy. Statistics show that between 1950 and 1975 there was a 17-fold growth in Japanese industrial production, but only an 8-fold increase in energy consumption, while energy use in the daily lives of the people was rather ample. This is to say that needs for energy in the growth of industrial production and civilian requirements depended by more than half on rational use of energy resources and improvements in the utilization rate for energy resources. He also said that Japan has many good experiences in energy resources management and use, as for example government promulgation of a law on rational use of energy resources, the setting up of an energy resources management organization and a consulting and advisory organization, the establishment of an energy economy and technical science study organization, the yearly launching of a mass "Energy Conservation Month" campaign, active training of energy resources technicians and management personnel, etc. All of these merit our study and use for reference.

A Few Suggestions

By way of bettering the development and use of energy resources in this city and doing their bit to hasten the Four Modernizations construction of our country, comrades who attended the forum offered many suggestions, principal of which were as follows: First, the establishment of a city-wide energy resources management organization for the unified administration of the development and use of energy resources throughout the city (including new energy resources) is an urgent necessity. Second, in view of the comparative lack of energy resources (principally meaning conventional energy resources) in the capital, the structure of Beijing industry

should be changed. In future there should be less development of high energy consumption heavy industries, and increased development of light industries, the textile industry and instrument-making industries, which consume low amounts of energy. Third, a shortage of energy resources management personnel and technicians in this city makes increasingly difficult a rapid response to the development needs of Four Modernizations construction. It is recommended that henceforth all effective measures be taken for vigorous training of energy resources technical cadres and management cadres. Fourth, earliest formulation of both a short-range and a long-range plan for energy resources with adjustment to pertinent policies and the promulgation of a national energy law so as to be able to make rational development and use of our country's abundant energy resources, and avoid waste.

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CSO: 4006

SOME STATISTICS ON SOLAR ENERGY POTENTIAL

Guangzhou NANFANG RIBAO in Chinese 16 Oct 79 p 3

[Article: "Solar Energy Briefs"]

[Text] The solar energy that China receives in a year is equal to the energy generated by .12 trillion tons of coal. In 1 year, the average amount of solar energy that is absorbed by 1 square meter equals the energy in 200 kilograms of standard coal.

Two-thirds of China's vast territory receives more than 2,000 hours of sunlight a year. In the north, the northwest, and the Qinghai-Tibet plateau, it is dry and there is little rainfall. These areas receive more than 2,500 hours of sunlight a year--excellent conditions for the utilization of solar energy.

Today there are more than 70,000 square meters of total surface area for solar hot water heaters in China. This saves more than 20,000 tons of coal a year. There are more than 2,000 solar cookers in China which have been in use for an extended period of time.

Over the last 50 years, the world's coal reserves have been depleted by 20 percent while the sun's thermonuclear reactor has been operating for 5 billion years.

CSO: 4006

ATTENTION GIVEN TO CHEAP, SIMPLE SOLAR COLLECTORS

Tianjin TIANJIN RIBAO in Chinese 11 Nov 79 p 1

[Article: "Using Solar Collectors To Save Coal"]

[Text] The broad masses of cadres, staff and workers of the city's Sixth Automobile Transportation Garage have paid attention to energy conservation, ceaselessly improved and applied the "solar energy heat collector" on a wide scale. The entire garage's three boilers for drinking water conserved over 20 tons of coal during the 3-1/2 months between July and October of this year.

This garage began the work of using solar energy very early. In 1975, they went to Beijing to observe and learn. After they returned, they successfully developed on a trial basis with the help of members from the Tianjin University a meter square "trailing type solar energy heat collector" for use in the bathroom of the staff members and workers. Temperature of the water inside the canister could reach 40 to 50 degrees. It could save about 150 jin of coal a day.

This year, as the movement to increase production and conserve energy became more in depth, this garage's support crew proposed the suggestion to use the "solar energy heat collector" to rebuild the boiler for drinking water. The idea received the enthusiastic support of the leadership. They first built a heat collector of 33 square meters in area with heat radiation panels to heat the water inside the canister to between 50 and 60 degrees. But because the water contains a lot of ferric oxide, and the water is polluted, the drinking water for the staff members and workers was affected. They actively thought of a way, they changed the heat panels to aluminum tubes and solved the pollution problem. But another new problem emerged: After remodeling, the temperature of the water was uneven and blocking occurred. They conscientiously sought for the cause and improved the design. They changed the original "row type heat collector" to a "spiral type heat collector" and solved the problem. Now they have taken the initiative to install "solar energy heat collectors" on all three boilers for drinking water of the entire garage.

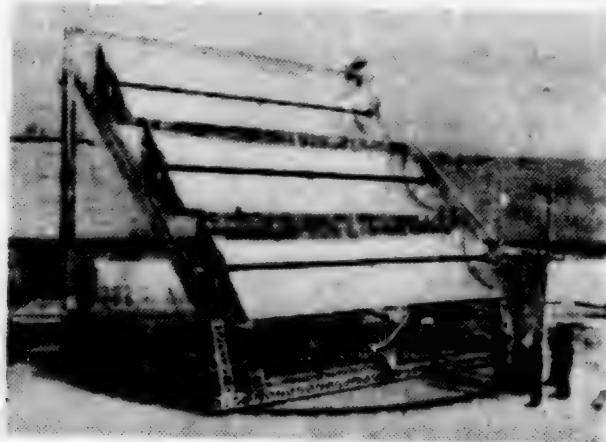
Take the first 3-ton boiler for drinking water as an example, water temperature can rise to between 50 and 60 degrees within 30 minutes, reaching a highest of 68 degrees and conserving over 300 jin of coal a day. According to preliminary estimates, nearly 10 tons of coal a month can be saved by the 3 boilers for drinking water. Between July and October of this year, nearly 3-1/2 months' time, they conserved over 22 tons of coal. They believe the cost of building the "solar energy heat collector" is low, each square meter costs 24 yuan and the technology is simple and it can be easily built. At present, they have rebuilt all of the garage's boilers for drinking water and the boiler for the bathroom and the results are good.

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CSO: 4006

NATION'S LARGEST SOLAR ENERGY GRAIN DRIER UNVEILED

Tianjin TIANJIN RIBAO in Chinese 29 Nov 79 p 3

[Photo caption]



The Beijing Agricultural Mechanization College and the Subsidiary Warehouse of the Bureau of Grains, Xintai Region, Hebei Province, has jointly developed a successful Solar energy grain drier, the Hebei TH-90, which is currently the largest in the nation. The drier consists of three cylindrical parabolic light collecting surfaces, heat collection tubes, a slow cooler, elevator and photoelectric automatic tracking facilities. The temperature of the heat collection tubes when loaded with grain reaches 80-120°C. The drier can dry 20-25 tons of grain in 8 hours.

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CSO: 4006

PRACTICAL APPLICATION OF SOLAR POWER DEMONSTRATED

Tianjin TIANJIN RIBAO in Chinese 5 Nov 79 p 4

[Article: "The Wonders of Solar Power"]

[Text] Solar energy is an inexhaustible, nonpolluting source of energy. Solar energy's broad applications have great significance in developing the national economy and in making life more convenient. China has already achieved encouraging results in the application, research, and development of solar energy.

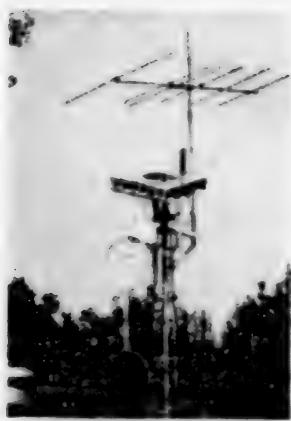


Fig 1. This fully automated, unmanned 100-megawatt TV relay can be activated and shut down automatically. Because the sun supplies the power source, energy is conserved and maintenance costs reduced.



Fig 2. This is a TH773 Type solar collector. The 2.5-meter-diameter mirror generates 2000°C heat that can weld a 25x25x175mm cutting tool within 3 minutes.

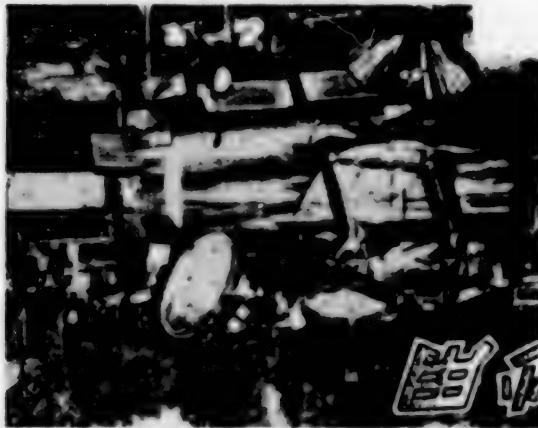


Fig 3. On display at the All-China Exhibition on Uses of Solar Energy were solar heaters, collectors, driers and solar silicon photoelectric cells, etc.



Fig 4. This solar cooker is both cheap and easy to manufacture. It is already in wide use in Linhun County, Gansu Province [Xinhua].

GEOLOGISTS HOPEFUL ON HARNESSING GEOTHERMAL RESOURCES

Beijing BEIJING RIBAO in Chinese 28 Nov 79 p 1

[Article: "Stress the Development and Application of Geothermal Energy Resources"]

[Text] The several dispatches issued today on the use of subterranean hot water remind us that concurrent with the conservation of coal, electric power, and petroleum energy resources must come attention to the development and use of new energy resources.

Geothermal energy is a new energy source that is relatively easily developed and one that has aroused wide attention in many countries. Our own country has a long history in the use of geothermal energy. Hydrogeologists in this city began in 1970 to make advances in this new area. After several years of arduous efforts, they prospected a 50-square-kilometer abnormally hot region in Beijing's southeastern district and sank some hot water wells there. Now underground hot water has begun to find application in industry, in homes for heating, in medical treatment, in the raising of fish, and in the growing of vegetables. Experience shows that there are extremely broad uses for underground hot water, which has a very high economic value. Fourteen hot water wells are currently in use and everyday 6,700 cubic meters of water are pumped from them. The heat they provide annually equals the heat liberated by 19,700 tons of standard coal. That presently used only for bathing and heating permits an annual saving of 4,300 tons of coal, and also saves on both human labor and atmospheric pollution. Underground hot water contains fluoride, uranium, radium, radon, borax, and sulfur, which are of medicinal value. The development and use of underground hot water is truly to kill many birds with one stone.

Underground hot water reserves in the Beijing municipal area are abundant. Preliminary statistics indicate that were the scope of extraction expanded 5 times what it is at present, figuring a 600-meter thick aquifer, it would last for more than 150 years. Hot water is but one form of geothermal resource stored underground. There is also the forms of steam, pressure, hot rocks and magma. Beijing's hot water wells belong to the medium to low

temperature types. As prospecting technology is developed and improved, and further advances made into the depths of the globe, the development and use of Beijing's underground thermal energy will have bright prospects.

Geologist Li Siguang [2621 0934 0342] compared geothermal energy's development and use as "like mankind's discovery that coal and petroleum could be burned," and he pointed out that "this is the opening of a new energy resource in the history of mankind." Though much work has been done in this city during the past several years on the development and use of geothermal energy, this new energy resource has still not received sufficient attention. The 22 existing hot water wells have not seen maximum use and some have gone unused for a long time. The pace of underground hot water prospecting work throughout the city has also been very slow, the main reason being that people are not sufficiently conscious of this new energy resource. Their eyes are fixed only on coal, electric power, and petroleum with no thought going to the use of geothermal energy. Development and use of underground hot water has still not be included among the city's construction plans, so it lacks the necessary investment, materials, and equipment. The management system is also imperfect with consequent serious waste in hot water resources. Daily about two-thirds of the hot water flows uselessly away. We must change this state of affairs with all possible speed, strengthen management, and institute comprehensive utilization of that underground hot water that has already been developed, unify management, and permit geothermal energy to serve the capital's industrial and agricultural production and the livelihood of the people.

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GEOTHERMAL WELLS SAVE COAL--The Hujialou Hot Springs and Baths use underground hot water for bathing. Water quality is good and has therapeutic qualities; a saving of large amounts of coal is also effected. In 1976 the hydrology team of the Municipal Geological Bureau sank a hot water well at this bath, which produced between 39 and 45 cubic meters of water per hour at a temperature reaching a maximum of 51 degrees. Once this bath switched to the use of underground hot water, the water, which contains fluorine, radon, radium, borax and sulfur, was found effective in the treatment of skin diseases and inflammation of the joints. It is popularly acclaimed and sometimes between 2,000 and 3,000 people a day come here to bathe. Since there is hot water, there is no further need to fire boilers, and every year there is a saving of 800 tons of coal and more than 30,000 yuan. Since the amount of water produced exceeds the amount consumed, part of the water is wasted in runoff. In June of this year, two storage tanks with a total capacity of 21 cubic meters were constructed to store the excess water so as to regulate the bath water. They still use the underground hot water for warmth and for barbering. [Beijing BEIJING RIBAO in Chinese 28 Nov 79 p 1] 9432

SANATORIUM GOES TO GEOTHERMAL HEAT--At the Xiaotangshan Sanatorium and at the People's Art Press, underground hot water is used to provide heat in winter with no further burning of coal. The Xiaotangshan Sanatorium in the suburbs of Beijing has an area of 25,000 square meters, and it was formerly heated with hot water from boilers. But since the hydrology team from the Geology Bureau sank hot water wells here, they use the underground hot water directly in their heating pipes, and all rooms are now heated with underground water. Throughout the winter season, temperature in the rooms can be maintained at around 20 degrees. The People's Art Press and a nearby reception office and sanatorium jointly use a single well for hot water to provide heating in winter. The area heated amounts to more than 15,000 square meters. Water temperature from this well is 59 degrees. On cold days with temperatures of -10°C , temperature in the rooms can be maintained at between 15 and 20 degrees above zero. According to statistics, these units can save annually during the winter season more than 350 tons of coal for heating and save more than 15,000 yuan of capital. [Beijing BEIJING RIBAO in Chinese 28 Nov 79 p 1] 9432

700-METER GOETHERMAL WELL--The Beijing Guanghua Textile Dyeing Plant's use of underground hot water to dye cloth permits an annual saving of 2,500 tons of coal and a saving of 150,000 yuan in capital. The four rotary dyeing machines in this plant's shops consume scores of tons of hot water each hour in dyeing cloth. Formerly cold water had to be softened to lower its hardness and could then be used only after being heated. Each year this required consumption of large amounts of coal, steam and softener. In early 1973, the hydrology team of the Municipal Geology Bureau sank a more than 700-meter-deep well at the Guanghua Textile Dyeing Plant. Water temperature reached 48 degrees, and water flowed at a rate of more than 40 cubic meters per hour. This plant courageously conducted experiments in the use of underground hot water in its four rotary dyeing machines and two desizing machines. Since the underground hot water temperature was high and its quality soft, the heating and softening process was no longer necessary. It could be used directly in the dyeing of the cloth with good results. Not only was coal conserved but the technological process was simplified with a rise in efficiency and a reduction in the pollution of the environment by coal smoke. [Beijing BEIJING RIBAO in Chinese 28 Nov 79 p 1] 9432

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